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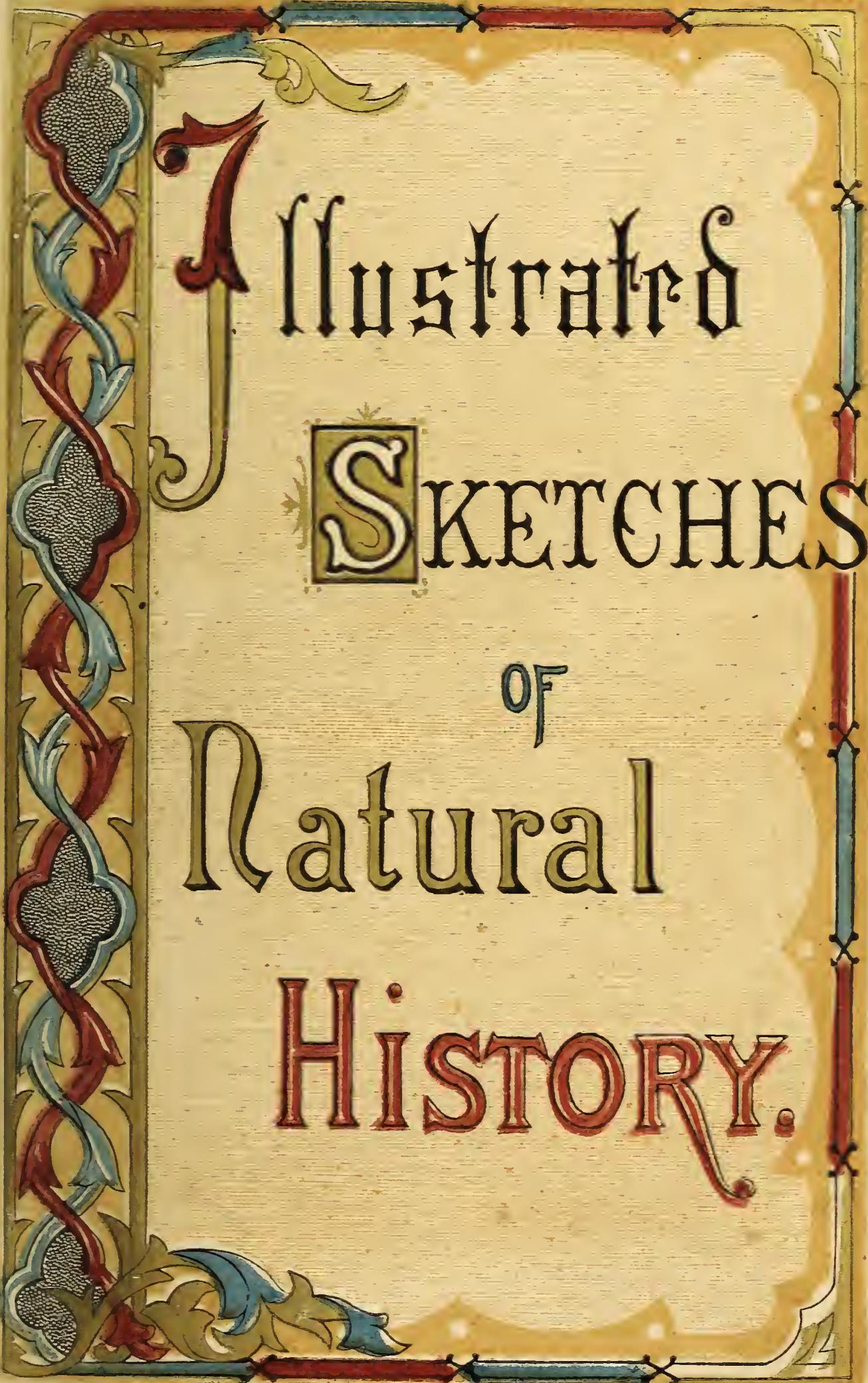
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HARVEST MOUSE.

LONG-TAILED FIELD MOUSE. COMMON MOUSE.

Illustrated
SKETCHES
OF
Natural
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ILLUSTRATED SKETCHES
OF
NATURAL HISTORY;
CONSISTING OF
DESCRIPTIONS AND ENGRAVINGS
OF
ANIMALS.

SECOND SERIES.

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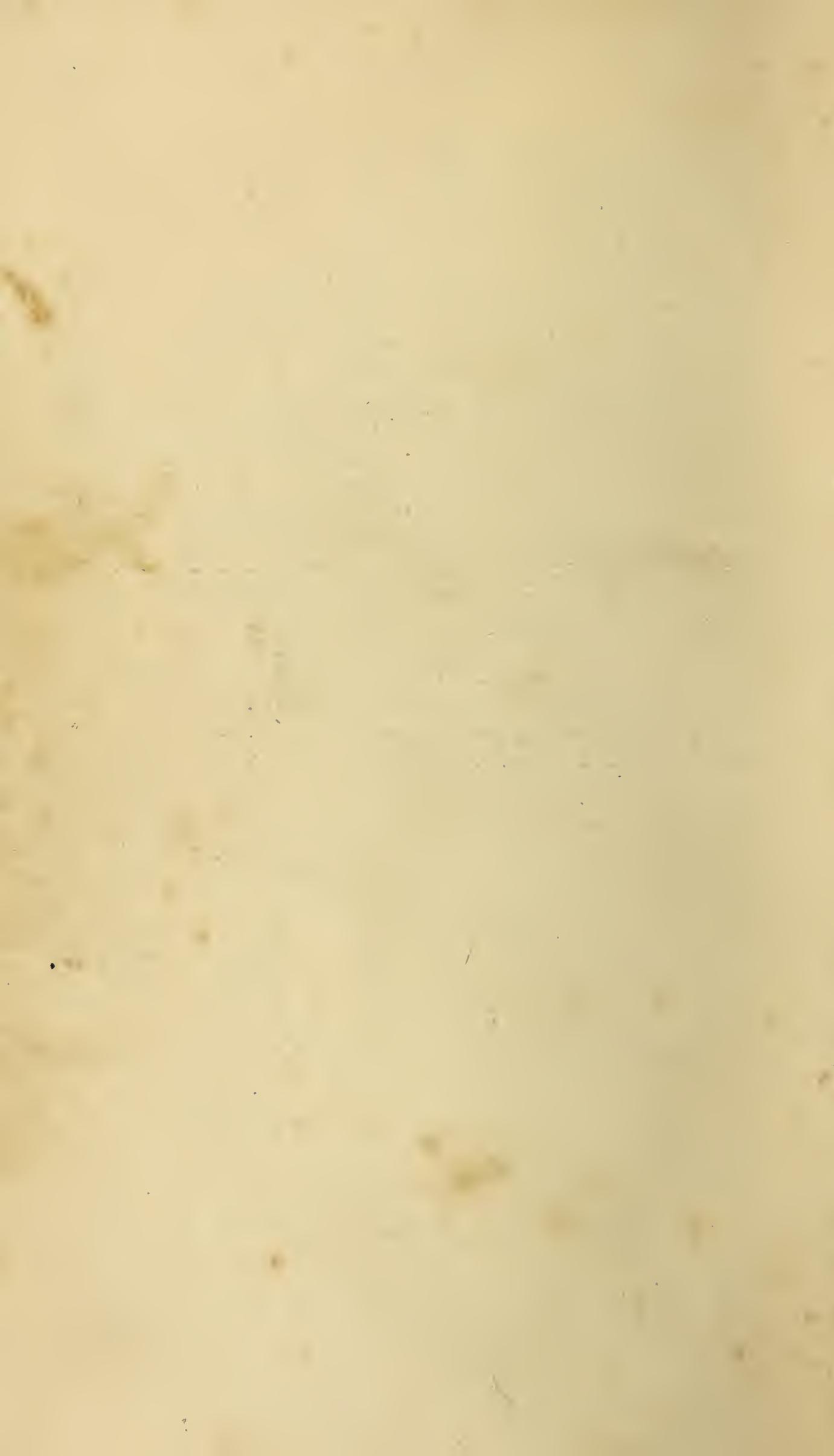
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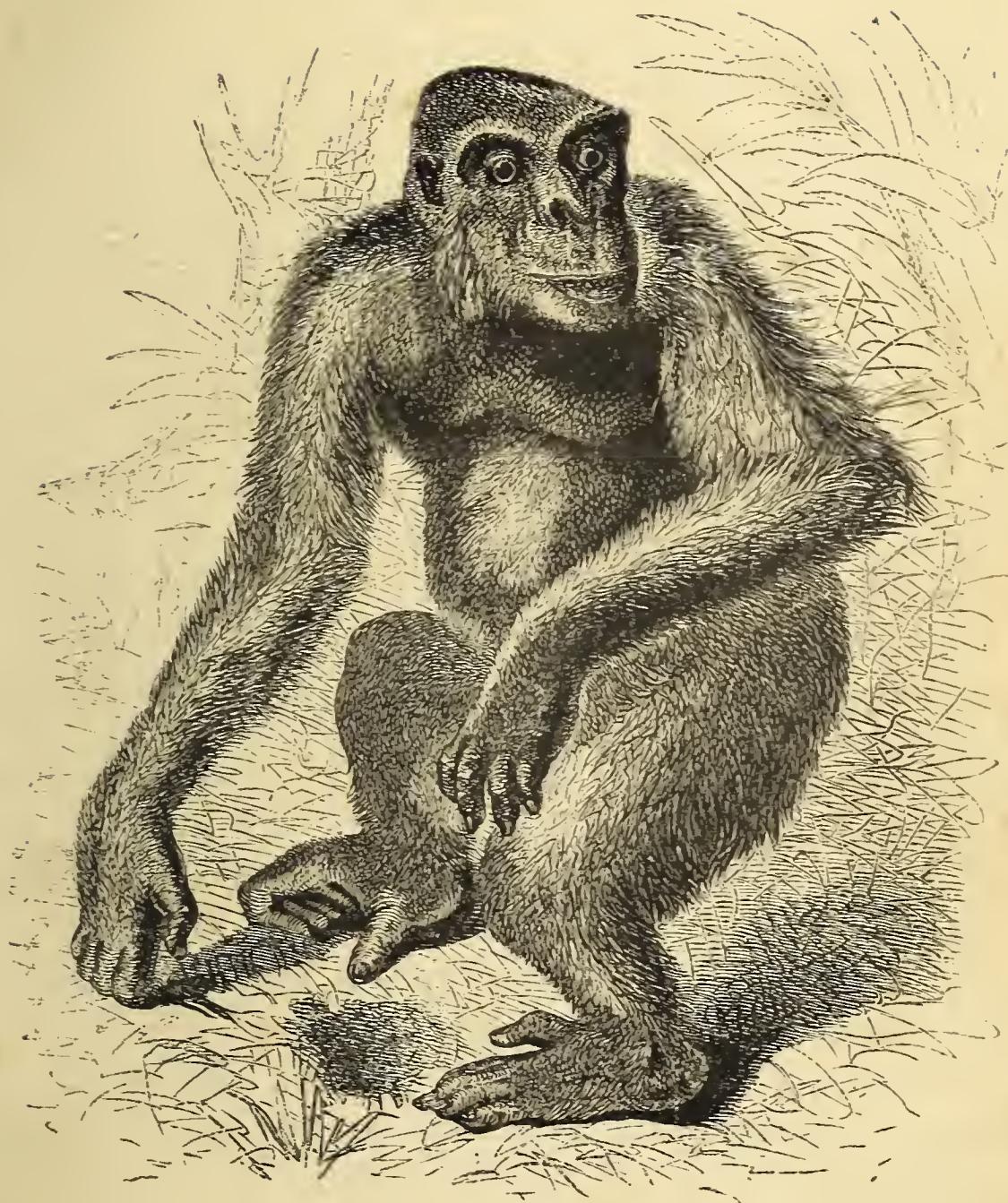
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THE GORILLA.



So far as we know at present, this huge man-like ape inhabits but a limited region, extending about two hundred miles north and the same distance south of the Equator, in Central Africa—not approaching the coast by nearly three hundred miles. There he has no enemies capable of coping with him—the lion, which

is common in regions further north and south, being unknown in the district.

The dimensions of the Gorilla are startling: its average height equals that of a man; its lower extremities are very short; while the whole of the frame is massive, broad, and powerful. The head is large, and a stout ridge of bone runs along the top of the skull from the forehead to the poll; the eye-sockets are large, and are surmounted by a thick bony crest. The eyes are deeply sunk, and the prominent ridge above them gives them a scowling expression. The forehead recedes, and the profile is almost a straight line from the poll to the eyebrows. The muscles of the jaws possess an immense power; and the jaws themselves, which are of huge size, are set with formidable teeth—the canines, in particular, resembling those of the lion or tiger. The mouth is very wide, and the lips are thin. When the animal stands erect, the fingers reach to the knees. The hands are long, broad, and of great power: the great toe, or thumb, is six inches in circumference. The colour of the hair is an iron-grey, except on the head, where it is of a reddish-brown, and on the arms, where it is nearly black. The naked parts of the face are also of a black hue, as well as the breast, which in the adult male is bare of hair. On the back the hair is found rubbed off by the bark of the trees, against which the Gorilla leans to sleep.

The habits of the animal are for the most part solitary, as it consorts only with its mate, and wanders through the forest apparently without any fixed home or abiding-place. Its food is the leaves of certain plants, juicy stems, the pith of trees, and various kinds of berries and nuts. Its amazing strength of tooth and jaw enable it to gnaw down the hard fibre of the trees to get at their pith, and to crack the stout woody enclosures of the forest nuts. The male is sometimes seen wandering alone, but the female is generally accompanied by her young one, whom she guards and

provides for until it is two or three years old. After separating from the parents, the young associate together in groups of four or five. The Gorilla has been said to be incorrigibly untameable, even though taken in infancy ; but this character of the animal is not reconcileable with the fact reported by Mr. Bushnell, one of the missionaries on the Gaboon, who informs us that they were in possession of a live young one, " which ran about the station."

A fine skeleton of the full-grown Gorilla was lately placed in the British Museum.

THE CHIMPANZEE.

THE Chimpanzee is an ape of a large size resembling the gorilla in no slight degree, and inhabiting the same parts of Western Africa in which the gorilla is found—its range extending to a considerable distance north and south of the Equator. The body of the Chimpanzee is covered with black hair upon every part with the exception of the muzzle, where the hair is whitish. It is possessed of astonishing strength, and is armed with formidable teeth, and is well able to defend itself. These animals live, to a certain extent, in communities, for the sake of mutual protection : like many other animals so congregating they appoint sentinels to watch over their safety, so that they can betake themselves to flight or to defence on hearing the signal of warning.

The natives of Western Africa assert that the Chimpanzees weave huts for themselves with the branches which they rend from trees ; and travellers have corroborated this statement, adding, however, that the huts are for the sole use of the females and their young. The Chimpanzees do not climb trees for safety, as many of the smaller tribes of monkeys do, but live habitually

on the ground ; they are so strong individually, and so formidable in the mass, that the leopard or the lion himself declines to attack them when united. The food of these animals in their wild state is supposed to consist almost entirely of vegetables, though when living in confinement they will not refuse a mixed diet : they are



said to make sad havoc among the plantations of the African cultivators, sometimes destroying whole crops of rice or plantains in a single night. Of their habits of life in their natural state little is known with certainty ; they have been described as attacking the lion and other beasts of prey with clubs and stones, and as running off with human captives to the woods ; but

these stories want confirmation, and are probably but the exaggerations of travellers. Of their habits when domesticated we know considerably more. There was a Chimpanzee to be seen for several years in the Jardin des Plantes at Paris, where he thrived well, grew fat, sleek, and glossy, and was a great favourite with the visitors. He manifested no trace of savageness, but was gentle, self-satisfied, and perfectly at ease; he would perform feats of great strength, in swinging by hand from the ropes of his cage, but all his gambols were deliberate and leisurely, and now and then he would cease them suddenly and sit gazing with a dignified air upon the company. The conduct of another Chimpanzee, on shipboard, has been described by Captain Payne, who tells us that it soon became familiar with the crew, would express its anger by barking like a dog, or would cry like a froward child, while it denoted its satisfaction by a sound like "hem," in a grave tone. It ate readily all kinds of vegetable food, and in time learned to like wine, of which it stole a bottle, and uncorked it with its teeth. It learned to feed itself with a spoon, and to drink from a glass, and took a pride in dress and in wearing a cocked hat. It generally walked on all fours, and Captain Payne noticed that it never placed the palms of its fore-hands on the ground, but, closing its fists, rested on the knuckles—a peculiarity which is common to the gorilla and the orang-outan, as well as the Chimpanzee, and has obtained for all three of them the title of "knuckle-walkers."

The climate of our island does not agree well with these tropical apes. Many specimens of the Chimpanzee have been brought hither from time to time, but they rarely survive for any lengthened period.

THE PROBOSCIS MONKEY.



THE Kahau is an inhabitant of Borneo, and probably of some of the neighbouring islands of the Indian Archipelago. It measures, when full grown, from three to four feet from the nose to the root of the tail, and is covered with fur of a beautiful chestnut colour on the principal part of the body, but which on the under parts, on the shoulders, and on the sides of the face, is of a golden yellow ; the chestnut hue deepens into a rich brown at the back of the head and between the shoulders. This singular specimen of the monkey races is distinguished from other quadrupeds by the nose, which grows to an unsightly length as the animal

advances in years, and imparts a preternatural ugliness to the countenance. When very young, the face of the animal shows little or no indication of the enormous proboscis with which it is destined to be adorned.

These monkeys live together in large troops or societies, and are observed to assemble in trees at the periods of sunrise and sunset, leaping about with the utmost activity, and clearing twelve or fifteen feet at a bound, and howling all the while; their cries are said to resemble the word "Kahau," and they are hence spoken of as the Kahau Monkeys. The natives of Borneo affirm that when leaping wildly about in the tree-tops, they take their noses in their hands to shield them from accidental damage—a precaution which may not be at all unnecessary in their gambols among the branches. The nose, or proboscis, has a very grotesque appearance, the reverse of attractive, unpleasantly suggestive of the human organ, but more resembling a caricature than any actual specimen of the nose of man. The nostrils are small, and placed at the very extremity of the organ, and have no similarity to those of mankind.

The Proboscis Monkey has the reputation of being savage and malicious in disposition.

THE ARAGUATO; OR, URSINE HOWLER.

THE Araguato, or Ursine Howler, is the commonest and most conspicuous of the Howling Monkeys, of which there are several species, all natives of South America. It is one of the largest of the New World monkeys, measuring nearly three feet in length, while the tail, which is prehensile, is of still greater length. The hair of its body is of a golden-red colour, that of the beard being of a deeper hue, and that on the sides of the face paler than the rest. These monkeys are

not so active and playful as many of their tribe, and are noticed, even in their wild state, for the comparative gravity of their demeanour. They live in large communities: as many as forty of them have been counted on one tree; and Humboldt states it as his opinion that two thousand of them might be found in the space of one square league. He saw young ones which had been brought up in the huts of the Indians, but which



never played or gambolled like other monkeys; and he describes their eye, voice, and gait as denoting melancholy.

These animals have derived the name they bear from their extraordinary capacities of voice, and from their habit of howling in chorus throughout the live-long night in the forests where they dwell. Their yells are

so loud that they may be plainly heard at the distance of a mile, and they are very various in their tone, imitating the savage cries of other animals, among which that of the jaguar is often repeated. As the whole community howls together, each member endeavouring to surpass his fellow, and as the chorus continues all through the night, it is impossible for any unfortunate traveller who has happened to camp near their settlement to obtain the repose he seeks.

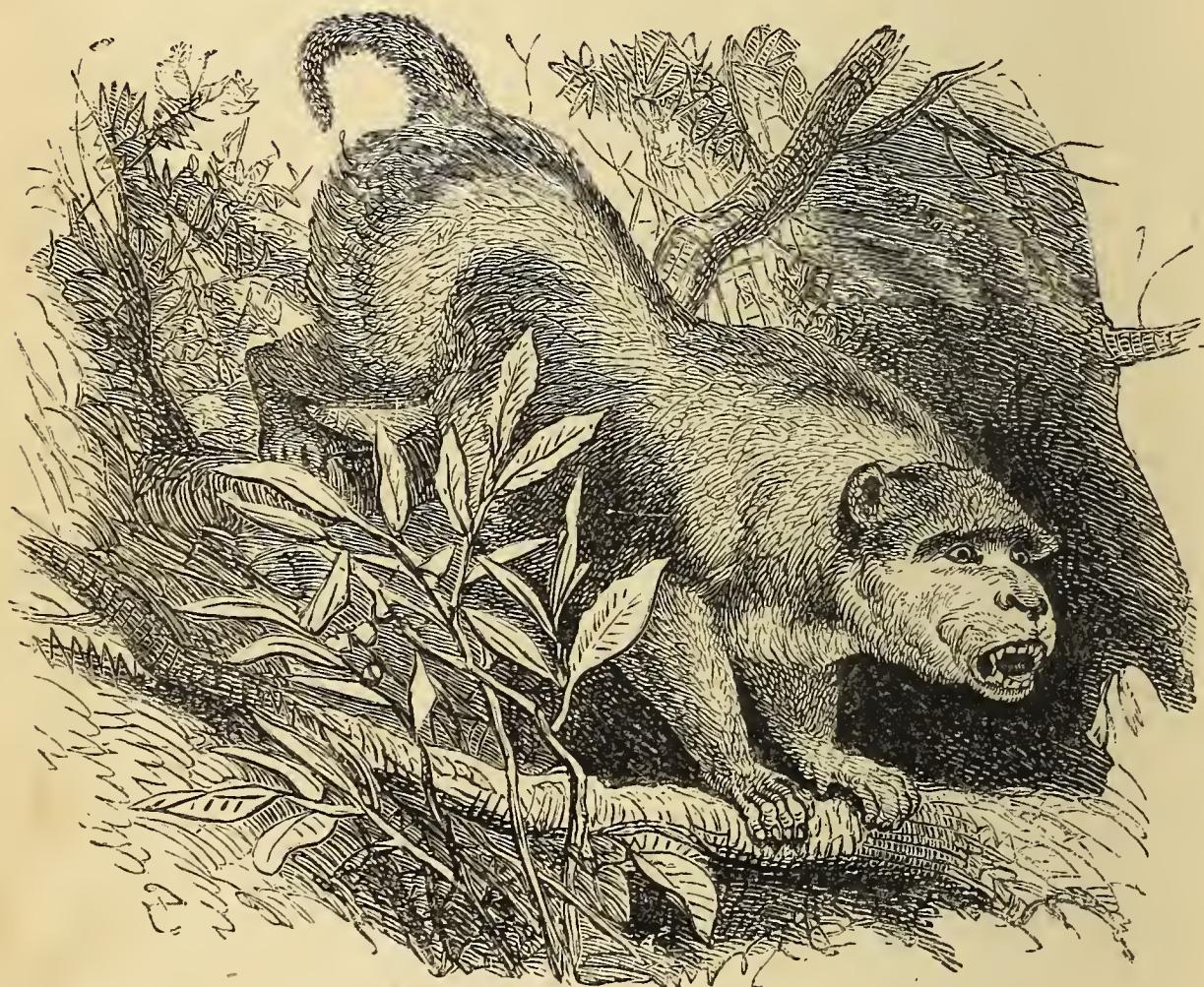
The Indians have a curious method of capturing these noisy creatures. In a large hollow nut, which has but a small orifice, they place a quantity of sugar, and leave it in some spot where the monkeys will be sure to find it. When one of them lights upon the treasure, he thrusts his hand into the orifice and grasps a handful of the sugar; but he cannot pull out his handful, because the hole is not large enough for the passage of his clenched fist: he might let go the sugar and withdraw his hand empty, but he is too greedy to think of that. At this crisis the hunter, who is on the watch, issues forth, and the monkey, burdened with the weight of the vessel, and deprived of the use of one limb, falls an easy prey to his pursuer. The Indians eat the flesh, first roasting it; it is described as exceedingly dry, and distasteful to Europeans.

THE RHESUS; OR, BHUNDER MONKEY.

THE Rhesus is one of the various species of monkeys common in Asiatic countries, and ranged under the general title of Macaques—a word said to be derived from the Chinese word for a bonnet, and applicable to these monkeys because the hair on the crown of their heads is so arranged as to form a kind of cap or covering. Some of them have this appendage much more conspicuous than others—the Bonnet Macaque deriving

its name from its complete head-gear—while in the Rhesus it is developed only in a slight degree.

The Rhesus is a rather handsome animal, being shaped more like an ordinary quadruped than a monkey, and having stout limbs and a short tail. Its colour is olive-green, mingled with warm tints of brownish-red or bright chestnut, the back being of the darkest colour, and the under parts a light dun. The boldness and



impudence of the Rhesus are said to be unrivalled by any other species of monkey.

The best description of the Bhunder Monkey in its wild state has been given by Captain Johnson, as follows :—

“ At Bindrabun (which name, I imagine, was originally Baunder-bund, literally signifying a jungle of monkeys), a town only a few miles distant from the holy city of Muttra, more than a hundred gardens are well

cultivated with all kinds of fruit, solely for the support of these animals, which are kept up and maintained by religious endowments from rich natives. When I was passing through a street in Bindrabun, an old monkey came down to the lowest branches of a tree we were going under, and pulled off my Hurcarrah's turban, as he was running in front of the palanquin, decamped with it over some houses where it was impossible to follow him, and was not seen again.

"I once resided a month in that town, occupying a large house on the banks of the river, belonging to a rich native; it had no doors, and the monkeys frequently came into the room where we were sitting, carrying off bread and other things from the breakfast table. If we were sitting or sleeping in a corner of the room, they would ransack every other part. I often feigned sleep to observe their manœuvres, and the caution with which they proceeded to examine everything. I was amused to see their sagacity and alertness. They would often spring twelve or fifteen feet from the house to another, with one, sometimes two young ones under their bellies, carrying with them also a loaf of bread, some sugar, or other articles; and to have seen the care they always took of their young would have been a good lesson to many mothers.

"On one occasion, when these monkeys were troublesome, I went out with my gun," says Captain Johnson, "to drive them off, and I fired with small shot at one of them, which instantly ran down to the lowest branch of the tree, as if he were going to fly at me, stopped suddenly, and coolly put his paw to the part wounded, covered with blood, and held it out for me to see: I was so much hurt at the time, that it has left an impression never to be effaced, and I have never since fired a gun at any of the tribe."

The natives of India are careful not to injure the Rhesus, and will avenge its injury by others; Europeans have been known to lose their lives in tumults which

have arisen in consequence of their wantonly shooting these animals. In some parts of India, where the Rhesus abounds, the natives, when they gather their crops, leave a portion standing for the use of these monkeys, under the superstitious notion that if they did not do so the monkeys would destroy the crops in the following year.

THE SPIDER MONKEY.

THE Spider Monkeys belong to that group of monkeys which have prehensile tails (that is, tails with which they can lay hold of various objects), and which are all natives of the New World. There are several species of Spider Monkeys. They have small round heads, long slender limbs, no, or scarcely any, thumbs to be seen on their fore-hands, and tails of great length, which they use much in the same way as an elephant uses his trunk. They have also two more pairs of grinding teeth than the apes and monkeys of the Old World. They are fitted for a life in the branches of trees, and never seem comfortable on the ground, on which they walk very slowly and awkwardly, shuffling and scrambling along as though their limbs were crutches. From this scrambling gait, and the length and slenderness of their limbs, they have obtained the name of Spider Monkeys—their motions resembling in no small degree those of a spider.

But among the trees of the forest they are just as active and agile as they are awkward on the level ground. Here they leap with astonishing rapidity from bough to bough, or swing themselves by the tail from one tree to another, and thus travel swiftly for miles without touching the earth. They live together in troops, support one another against the assaults of enemies, and will not allow others of the monkey tribes to

trespass on their domain. Their food is leaves, young buds, berries, and fruits, together with insects, and the eggs and young of birds. These little creatures are often domesticated, and indulged as pets. In captivity they are gentle and docile, and become much attached to those who are kind to them. Though they are easily put out of temper when teased, they are not spiteful,



and are seldom known to bite. They are not nearly so playful as the common monkeys, and, indeed, their character has been described as grave and approaching to melancholy: they will, however, play many amusing gambols in order to attract the attention of those they are fond of, and will testify towards them every mark of affection.

The whole of the Spider Monkeys, though possessed of such active powers, are said to be constitutionally lazy, and, unless pressed by hunger, will sit in one attitude for hours together without moving, or will hang motionless by their tails. Their flesh is esteemed by the Indians, and is said to resemble that of a fowl, being as white and tender, but more juicy. Sometimes, when it is mortally wounded, the poor creature hangs on to a branch by the tail, and so dies: nor will the body fall when dead, until some days have elapsed, and decay has commenced. When shot, the Spider Monkey utters no complaint, but looks touchingly first at the wound and then at the sportsman, with an expression of reproach which cannot be mistaken. If it be not too much hurt, its companions will assist it in climbing beyond the reach of danger.

THE ELEPHANT SHREW.

THE Elephant Shrews derive their name from their peculiar elongation of nose, which reminds the spectator of the elephant's trunk. There are several species of these animals known to exist, all of which are found at the Cape or in Southern Africa, with the exception of one, the *Macroscelides Roretti*, which is an inhabitant of Algeria. The term *Macroscelides*, which is applicable to all the Elephant Shrews, is of Greek origin, and signifies long-legged—the hinder limbs being very long, enabling the animal to sit comfortably in an upright position, and giving it also the means of very rapid locomotion. Like the British Shrews, these animals are very small and feeble, measuring something less than four inches in length, exclusive of the tail, which is about three inches more, and resembles that of our domestic mouse, though the base of the tail in some specimens is found to be furnished with small glandular sacs. The colour of the

fur is a rather dull-brown, varied with reddish hues on the sides, and fading into greyish-white on the abdomen and under sides of the limbs. The food of this Shrew is supposed to consist entirely of insects, which it hunts in the day-time, and in the capture of which its long prehensile nose is, doubtless, of most effective service: the nostrils are placed obliquely at the end of the nose. The home of the Elephant Shrew is a deep and winding burrow excavated at



some depth below the surface of the ground, and its entrance is always a shaft sunk perpendicularly. When alarmed it makes at once for its underground habitation, and from its exceedingly rapid motion it is very difficult to catch; the form of the little creature cannot be discerned as it skims over the ground—all that the eye perceives is a little undefined shadow, which in a moment vanishes from sight.

THE MUSK RAT (MUSQUASH OR ODONTRA).



THE Musk Rat, so called from the sweet odour it exhales, is a native of North America. It is about fourteen inches in length from the nose to the base of the tail, the tail being about ten inches. The head is short, the body rather flat, and the hind feet large. The upper parts of the body and the tail are of a brown mud colour, the sides a yellowish-brown, and the under parts ashy-grey. The fur is like that of the beaver, but shorter; it supplies the place of the beaver's fur in hat-making.

The food of the Musquash is almost entirely vegetable, though in confinement it is known to eat mussels

and oysters. They feed largely on roots, tubers, maize, and nettles, and on the summer and autumnal berries and fruits, committing their ravages both in cultivated field and garden. In the fall of the year the Musquash builds a house of mud in the swamp, before the water freezes, making the entrance under water, but raising a mound above, in which he prepares a snug chamber, containing a good bed of dry grass, often not less than a bushel in quantity. When the surface freezes, he makes breathing-holes in the ice, and protects them by a covering of mud. In these retreats multitudes of them fall victims to the Indians, who hunt them both for their skins, for which there is always a ready market, and for their flesh, which is considered as good as that of the wild-duck. The Indian hunters steal unawares upon the Musquash's conical dwellings, and, thrusting a spear with many prongs suddenly through the mud walls, sometimes transfix four or five at a time.

In summer the Musquash burrows in the banks of lakes, making long passages, leading to the nest, in which the young are brought forth. It is not a very shy animal, and will suffer itself to be approached very near; but it is always on the watch, and dives instantaneously on perceiving the flash of a gun—striking the water a smart blow with its tail as it goes down. A mode of catching them in spring and summer-time is by traps, which are so contrived as to fall into the water the instant the Musquash is caught, drowning the captive ere he can attempt to escape.

These animals are described as exceedingly lively and playful when free from alarm: numbers of them are often seen on a summer night disporting together in some secluded pond or pool—swimming, plunging, diving, or sprawling perfectly motionless on the water. If, while thus enjoying themselves, the report of a gun is heard, there is a momentary plunging and scampering of the whole community, and then not one is to be seen.

The Musquash can be readily tamed, and is found to be gentle and playful, attached to its owner, and cleanly in its habits.

THE CIVET.



THE Civet is a native of the northern parts of Africa, where many of them are kept by the inhabitants for the sake of the perfume they afford: the perfume is secreted in a double pouch, under the abdomen, close to the insertion of the tail, and is obtained by scraping it from the inside of the pouch with an instrument of bone or iron, at intervals of three or four days. The male yields a larger quantity than the female.

The Civet is about thirty to thirty-six inches in length, and ten or twelve in height; its tail is half the length of the body. Its hair is long, and of a

brownish-grey colour, with transverse black spots or bands. A hairy crest or mane, which the animal can erect at pleasure, runs along the ridge of the back. The legs and most part of the tail are black; the eyes are surrounded each by a black patch, and two or three black bands pass from the base of the ears towards the shoulder and neck. The lips are fringed with white fur.

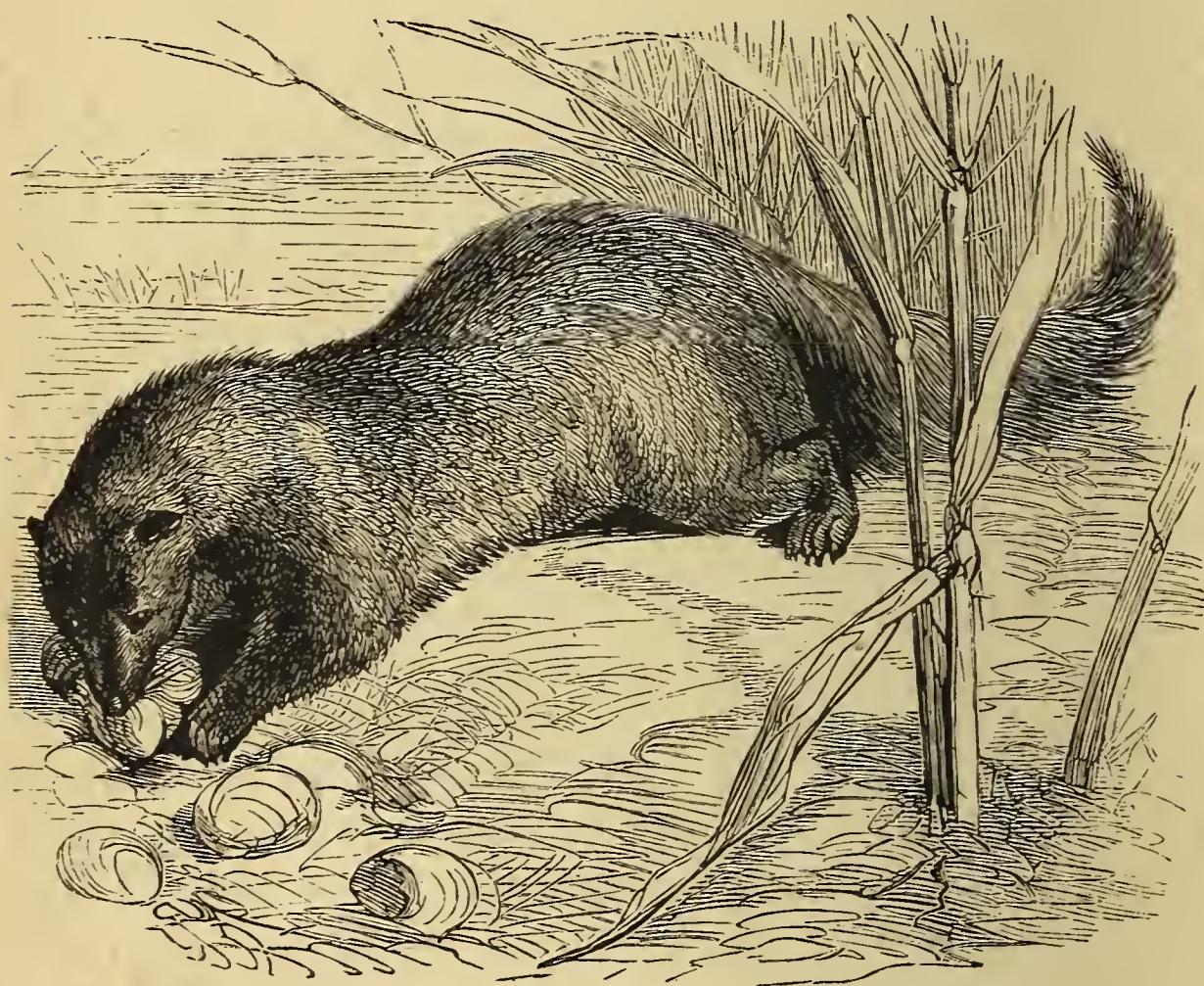
The habits of the Civet resemble those of the fox and the cat; it is for the most part in a drowsy state during the day, and prefers to prowl about in search of its prey, which are chiefly birds and smaller quadrupeds, in the night-time—though it will seek its victims by day when pressed by hunger. Its cat-like habits, and the facts that its claws are to some extent retractile, and the pupils of its eyes contract in the light and expand and glow in the dark, may, probably, have procured it the name, by which it is often wrongly called, of the Civet Cat.

The Civet is remarkable for the rich colouring of its fur, and is, on the whole, a handsome and graceful creature; but it is irritable, and will growl fiercely when provoked. It is sometimes partially tamed in captivity, but will not become familiar, or allow itself to be handled; consequently, whenever it is necessary to obtain the fragrant perfume which it secretes, it has to be confined in a cage contrived for the purpose, and in which it is incapable of turning itself round, and through an opening in which the instrument is inserted for scraping the pouch.

THE EGYPTIAN ICHNEUMON.

THE Ichneumon is a small lithe animal, with narrow body, short legs, and pointed snout. It measures about eighteen inches in the body, and its tail, which termi-

nates in a tuft of long hairs, is about the same length. The colour of its fur is a mingled chestnut and brown, the muzzle and the feet deepening in hue almost to black. Most strange and startling stories have been told concerning the Ichneumon ; but, according to Sonnini, much that has been written about this animal is fabulous : “it was held sacred in ancient Egypt ; honours were rendered to it on its death ; it was main-



tained with the greatest solicitude during life ; funds were set apart for its support ; they served up to it bread steeped in milk ; and it was generally forbidden to kill any of the race.” Apart from their superstitions, the regard of the ancient Egyptians for the Ichneumon had a sufficient foundation, seeing that it is the most determined foe of the crocodile, upon whose eggs it feeds largely and constantly, thus preventing the too great multiplication of those formidable monster rep-

tiles which infest the Nile and the lands bordering on its course. The Ichneumon further preys upon snakes, lizards, rats, mice, and other vermin—and, as it could be tamed without difficulty, it is no wonder that it was domesticated and prized by the inhabitants, who must have found its services of value.

The Ichneumon was, absurdly, called by the French "Pharaoh's Rat;" but it has no resemblance to rat or mouse beyond some similarity in the colour of its fur. At the present day it is common in Egypt, and may be seen going about the house like a cat. Mr. Barton, the English consul, kept a tame one for years. Its habits, in some degree, resemble those of the cat: it will track its prey to its hiding-place, and will sit waiting patiently for hours for the reappearance of its victim; and it will growl and bark when angry or irritated. It is extremely agile in its motions, and its flexible form and small bulk enable it to pursue its prey to advantage through small holes and crevices.

THE MOONGUS; OR, INDIAN ICHNEUMON.

THE Ichneumons have been described as the very reptiles of the mammalian animals—their movements reminding the spectator of those of the serpent, while their pointed heads, their short feet, and lithe and flexible bodies, enable them to wind and creep about almost out of view, and to explore the narrowest clefts and crannies where their prey is found. The Moongus, or Indian Ichneumon, greatly resembles the Ichneumon of Egypt in form, though it is inferior to that in size, being, when full grown, considerably under three feet in length, including the tail, which is about half its entire measurement. It performs for the Asiatics much the same service as its African congener does for the

Egyptians ; being a most vindictive enemy to rats, mice, snakes, and the smaller reptiles of all kinds, which it hunts and devours. It displays unflinching courage and remarkable adroitness in killing snakes, which it invariably seizes by the throat, so as to avoid being struck by their fangs. On account of these qualities the Moongus is often domesticated among the Indians, much as the household cat is with us, though



it is by no means so gentle an inmate, or so familiar with the household. Like the cat, it is prying and inquisitive, and when first brought into a dwelling, it runs sniffing and searching about in holes, corners, and out-of-the-way places, making itself acquainted with every object it can reach. It will effectually clear the dwelling of vermin of all kinds, and, as it is neat and cleanly in its habits, it secures for itself the regard and favour of its owner. When feeding, however, it is

usually excited and irritable, and will not allow itself to be touched ; but makes off, if possible, to some dark and secluded spot, there to enjoy its meal alone. Its habits in the wild state do not seem to differ much from those it exhibits in domestication ; it is observed to be just as fussy and inquisitive—entering all sorts of narrow hiding-places, gliding along under high grass or reeds, exploring the thick-set shrubs and bushes, and sometimes burying itself in holes in the ground, reappearing after a time with some small burrowing animal which had vainly sought for safety in its subterranean home.

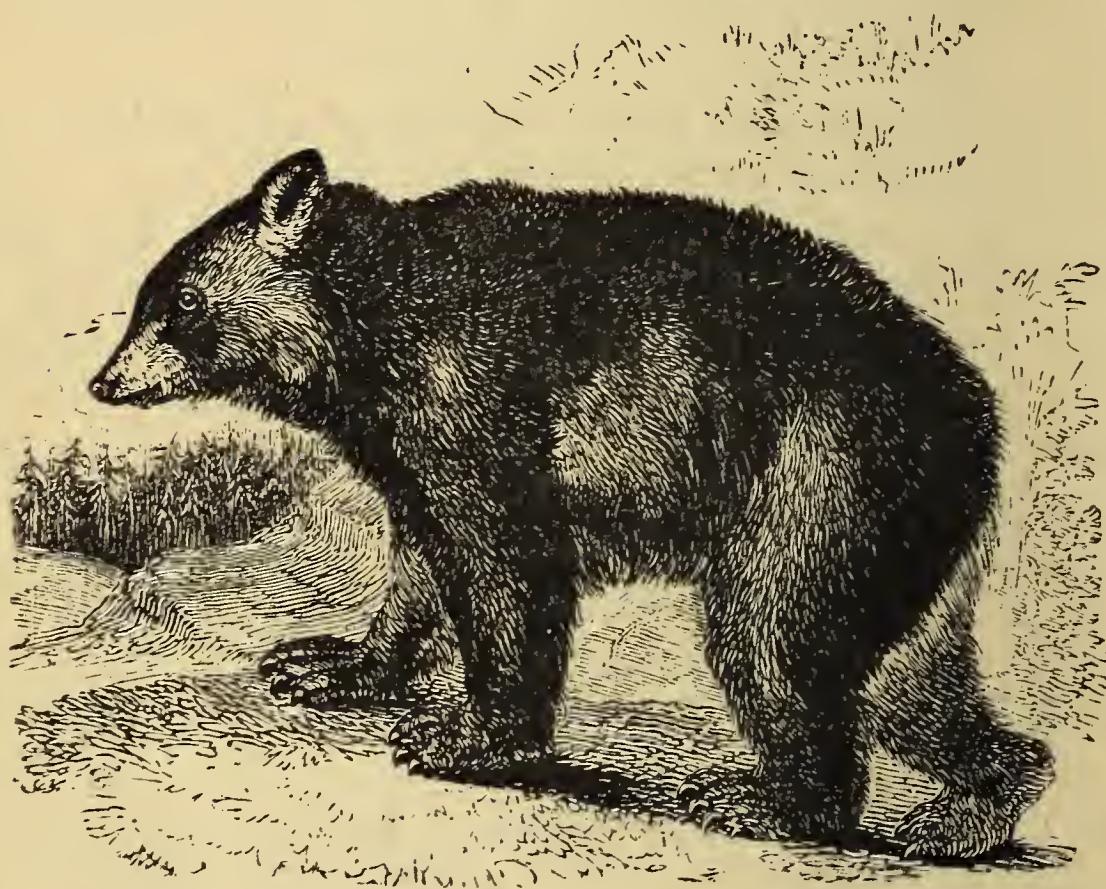
The Moongus has been frequently brought to this country, where it seems to thrive tolerably well. One that was formerly exhibited in the Tower has been known to destroy a dozen rats, all let loose together in a large room, in the space of a minute and a half.

The colour of the Moongus is grey, enlivened with irregular spots of a darker hue, which impart to it a pleasing appearance.

THE BLACK BEAR ; OR, MUSQUAW.

THE Black Bear, or Musquaw, is found in the wooded districts of nearly the whole of North America, from the shores of the Arctic Sea as far south as Carolina. It is smaller than the Brown Bear of Europe, and the other bears of America—its entire length seldom exceeding five feet. It has a narrow head and a prominent muzzle covered with short thick hair. Its fur is soft, smooth, and of a glossy black, which qualities render it of value in the market ; it is further valuable for its fat, used as a specific for increasing the growth of the hair. For many years it has been hunted, both by the red men and the backwoodsmen, as well as the professional hunters, until its numbers, which were

once enormous, have become sensibly diminished. Sixty years ago the importation into this country of Black Bear skins amounted to twenty-five thousand annually ; they are now far below ten thousand. The food of this Bear is chiefly vegetable, though it will feed on animal diet when pressed by hunger, preferring insects, snails, birds, eggs, and fish. It is extremely fond of honey, and has been known to gnaw its way through the solid trunk of a tree to get at the combs of the wild bees,



which it devours in the mass, regardless of the stings of the owners. The flesh of the Musquaw is much relished by the American settlers and hunters, and the hams, when properly cured, are regarded as a luxury by epicures.

The chase of the Musquaw is an exciting and dangerous pursuit, and often proves fatal to the hunters. Though the animal is naturally timid, and will not willingly face a man unless in defence of its young, it is, like many other timid creatures, a furious and for-

midable beast when brought to bay, and it has no means of escape. The dogs of the hunters have little chance against it, and are beaten off, maimed or killed by its heavy paws ; nothing short of a rifle ball in the head or chest will check its fury.

In the northern parts of America, the Black Bear invariably hibernates during the winter, and about a thousand of them are killed every year in their winter retreats by the hunters of the Hudson's Bay Company. They generally make their den under a fallen tree, scratching out the soil beneath, and retiring at the beginning of a snow-storm into the hole thus made ; the falling snow covers them up warmly for the winter. They do not come abroad again until the snow is nearly gone, when they find berries of various kinds to feed on. The hunters who kill them in their dens invariably find them in a sound sleep. Sometimes the Musquaw hibernates in a hollow tree, and not unfrequently is discovered and cut out of his retreat by the hunters.

This Bear is remarkably prolific, the number of the cubs varying from one to five, according to the age of the mother ; they begin to have young ones long before they attain the full size. The cubs are very small at their birth, measuring no more than six or eight inches in length. They are born in January or February, and are nursed by the mother until about six months old.

The American Indians have a superstitious reverence for the Bear ; and though they hunt it and take its life, they are careful to apologize to the carcase for the liberty they have taken in killing it : they will pay honours to the grizzly head, and burn tobacco beneath the nostrils to appease its anger ; but, when they have devoured the body, they will finish by putting the head also into the pot.

THE GRIZZLY BEAR.

THIS huge creature, the most formidable and the most dreaded of the Bear tribe, is found in various districts of North America. When fully grown, it measures more than eight and a half feet in length, and as much in girth round the body ; and its weight exceeds eight hundred pounds. The fore-feet, which are enormously powerful, are about eighteen inches long, and armed with sharp claws measuring five inches ; these claws cut like knives, and inflict fearful wounds when the bear strikes with its paw. The head is large and heavy, and the tail is so short as to be concealed by the shaggy fur of the hind quarters. When the animal is young, the fur is of a beautiful brown colour, with a dark line along the back, and it is so plentiful that it shakes and swings with the movements of the body ; but, as the animal reaches maturity, the colour of the fur changes to a dull brown, or sometimes to an iron-grey plentifully sprinkled with grizzled hairs on the surface, imparting a whitish appearance to the whole mass.

The Grizzly Bear is said to be the only bear which will attack a human being without being first alarmed or wounded. It is not always, however, that it will attack a man without provocation, and it generally prefers to avoid the presence of men by a timely retreat. But, if its rage is once roused by the pain of a wound, it rushes furiously upon the hunter, whose life will then depend upon his coolness and presence of mind. As the Bear advances against his enemy, it pauses for a moment, when within a few yards, to erect itself on its hind legs ere rushing to the death-grapple. This momentary pause is the hunter's opportunity for lodging a bullet in the monster's heart or brain : if the shot

fail, woe to the luckless marksman. Shots in any other part of the body are of small avail, as the Bear will fight savagely when literally riddled with bullets. The hunter who kills a Grizzly Bear in single fight is always held in honour among the North American trappers, whether Indians or whites, and he is entitled to wear a necklace composed of the bear's claws—a mark of distinction which none who had not fairly won it would be allowed to assume.



The food of the Grizzly Bear is both vegetable and animal. He is known to climb oak trees and shake off the acorns, which he then descends to devour; and he is seen to dig the ground with his sharp claws in search of roots and bulbs. Sometimes he will carry off the game killed by the hunter; and he has even been seen to dash into a herd of bisons, and beat a bull to the ground, killing it by repeated blows with his heavy paw.

All the animals of the plain stand in awe of the Grizzly Bear, and show signs of terror at his approach. Horses evince their fears at sight of him, and can only be brought to face him by being carefully trained for the purpose.

If taken in hand when young, the Grizzly Bear may be tamed without much difficulty ; and then, by his grim humour, his playfulness and odd ungainly tricks, he often becomes a most amusing pet. Almost as many stories are told of his laughable tricks when tamed, as of his savage and ferocious prowess in a wild state.

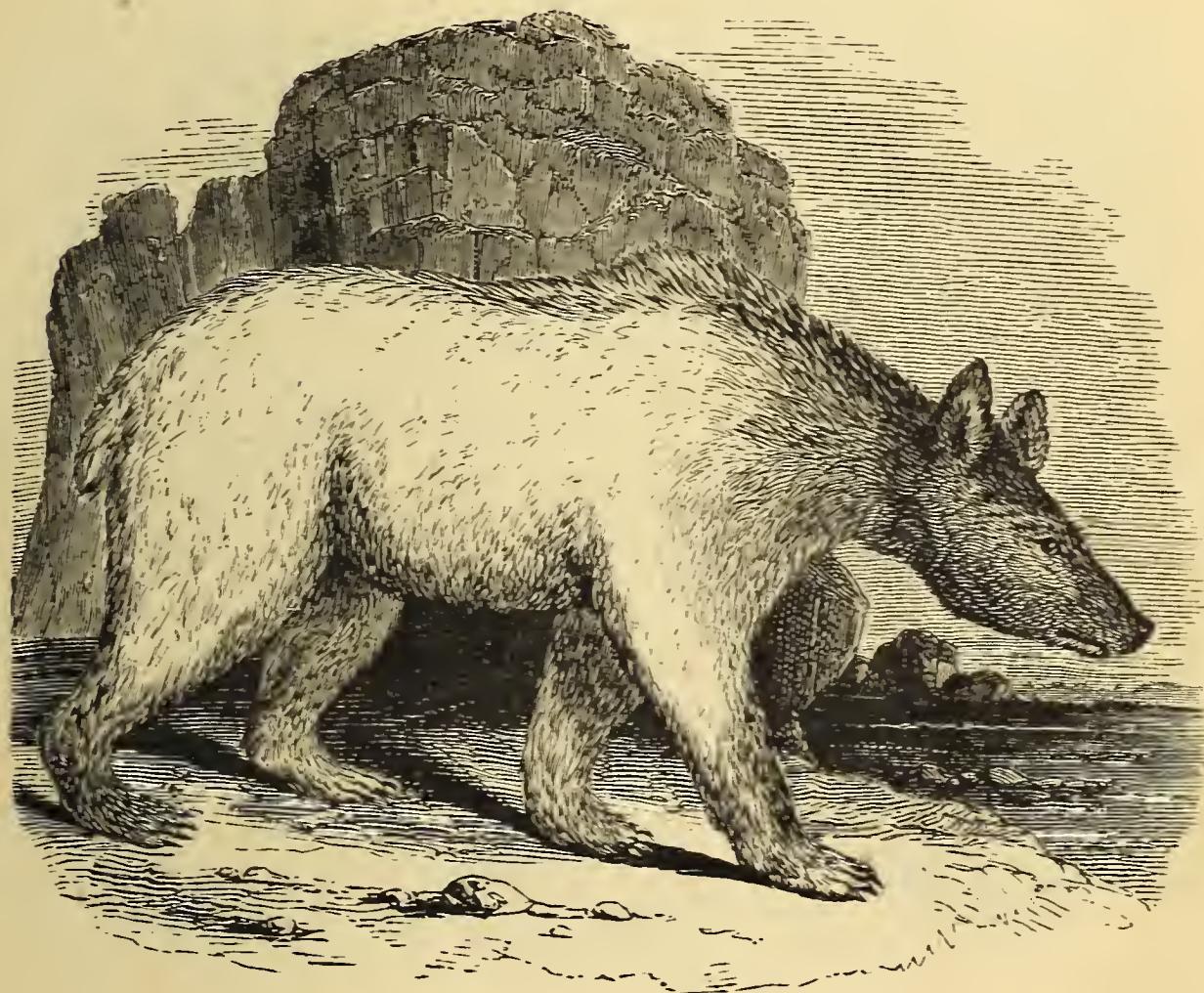
THE SYRIAN BEAR.

THE Syrian Bear is the animal so frequently mentioned in Scripture under the name of the bear. It was two of these that came out of the wood and “tore the forty and two” children who mocked the prophet Elisha, as narrated in the second chapter of the second book of Kings ; and it was a bear of this kind that the shepherd David slew in defence of his flock. The Syrian Bear is still found in the mountainous parts of Palestine, and is often seen in the higher regions of Mount Lebanon ; it is its habit to remain concealed during the day in the recesses of the mountain, and to come down towards evening in search of food. It is known frequently to prey upon animals, but it lives for the most part upon vegetables, and commits sad depredations upon the cultivated lands which lie within its range.

The hair of this animal is long, and rather shaggy and curly, and beneath the long hair there is a warm thick covering of woolly fur. Along the shoulders and a portion of the neck, the hair stands nearly erect, and has somewhat of the appearance of a mane. The colour

of the hair varies with the age of the animal ; when young it is of a tawny brown, sometimes marked with tawny spots ; but the colour grows lighter as the bear grows older, and is nearly white when it has reached maturity.

A bear of this species was formerly known at Oxford, where he occasionally walked about the town in cap and



gown, visiting the members of college and partaking of their hospitality. He was petted, as most favourites are, more than was good for him, and grew to be dainty and choice in his feeding—would eat ices, and relished hot muffins, and once walked into a shop and helped himself to sweets, to the terror of the shopkeeper. He learned to like society so much that he became miserable if left in solitude ; and, when at length it was

found expedient to shut him up, he refused all nourishment, and, finding it impossible to regain his liberty, pined away and died.

THE RACOON.



THE Racoons are inhabitants of the forests of North America. It is not quite so large as the English fox, which it somewhat resembles. Its average length is about two feet—the tail, which is bushy like that of our fox, measuring about a foot more. The colour of its skin is a blackish grey, not very defined, owing to the body being covered with two kinds of fur—an inner woolly fur which is all grey, and a longer stiffer kind, projecting through the wool, which is black and

greyish white. The bushy tail has dark rings upon a grey ground.

The food of the Racoon is chiefly vegetable, though it is known to feed also on birds, and upon crabs and oysters. It is fond of water, drinking a great deal, and preferring to moisten its food in water before eating it —a propensity which procured for it the name of *Lotor*, or washer. It seeks its food by night, and passes the day-time in sleep, coiled up in its warm coating of fur.

The Racoon is easily tamed, and becomes an amusing pet in captivity, though it must not be trusted within reach of poultry, lest it suddenly seize them in its paws and bite off their heads. It is said that if when in confinement it is indulged with strong sweet liquors, it grows so fond of them as to reject its usual beverage of water and to turn drunkard.

Hunting the 'Coon is a favourite night sport in the forests of North America. A dog is set upon the track of the animal, which, when it is tired with the chase, usually takes refuge in a tree. No sooner is the game "treed" than a fire is lighted under the branches to show the place of his retreat, and some one climbing up dislodges the poor 'Coon for a fresh run. When finally brought to bay he fights courageously and dies hard. This kind of sport, and the incessant rifle practice of the North Americans, have all but annihilated the Racoons in many forests where they were formerly abundant. They are not very prolific, the female bearing but two or three young ones in the year.

THE WOLVERENE ; OR, GLUTTON.

THIS animal has been described as most ferocious, destructive, and disgustingly voracious, and grim stories have been told of its treacherous and bloodthirsty nature. There is little foundation, however, for the

evil reputation of the Wolverene, which though it has obtained the name of the Glutton, is not probably more gluttonous in its feeding than many others of the carnivorous races. The Wolverene is about two feet six inches in length, the tail being about ten inches in addition, including the fur. In appearance it is not unlike a bear ; its fur is dark brown, deepening almost to black in winter, and varied with bands of a lighter



and warmer hue running from the shoulders along the sides and uniting over the hips ; its back is arched ; its head broad and round, with jaws like a dog's ; its tail is bushy ; its legs thick and short, the paws being quite black, whilst the claws are almost as white as ivory.

The Wolverene inhabits the high northern latitudes of Europe, Asia, and America. It is detested by the hunters of all countries, from its mischievous habits—

and to them it may have owed its bad name and worse reputation. It is said to feed chiefly upon the dead bodies of animals which it does not kill, though it will chase the smaller animals and make them its prey. It often renders the efforts of the hunter of no avail, by following him in his rounds and destroying the traps which he sets for the marten or sable, and devouring the bait, which is generally a portion of a fowl or a piece of dried venison. It is too cunning to enter a trap itself, but will easily pull it to pieces. If it finds martens or sables caught in traps, it does not eat them, but carries them off to some distance and buries them in the snow. It is still more injurious to the hunters at times by discovering their "caches," or concealed stores of provisions, and devouring or spoiling the whole.

In confinement the Wolverene seems to be quite content—running, leaping, climbing, rolling, and enjoying itself in an apparently good-humoured way, and preferring to any other kind of food that can be offered it the dead body of a cat.

Wolverenes are hunted for their skins, the fur, when in good condition, being much esteemed: the skins from the north of Europe and Asia being of much greater value than those from America. The white claws are esteemed by the females of Kamtschatka, who place them as ornaments in their hair.

The Wolverene has young but once a year, producing from two to four cubs at a time.

THE POLECAT.

Of all animals known to the English farmer and gamekeeper, the Polecat is the most detested and persecuted, being invariably hunted, shot down, or otherwise destroyed, whenever the opportunity of doing

so occurs. It is the most destructive of the Weasel tribe, and, from the foul odour which it is capable of emitting—and which has obtained for it the name of the Foumart, or Foul-marten—is also the most disgusting. It is about seventeen inches in length, exclusive of the tail, which measures about five inches more; its body is covered with two kinds of fur—a short fur, which is tawny in hue and of a woolly nature, and a long bristly fur, which is blackish-brown and glossy, and valuable



for making the brushes known as "fitches," much used by artists.

The food of the Polecat is most varied, and it seems to live by the indiscriminate slaughter of any animal which it has the power to master. Hares, rabbits, and other small quadrupeds are its victims; but it shows a decided preference for poultry and game, and its ravages in the preserve and hen-house are most destructive. It has the most frightful propensity for slaughter, and

when it enters a hen-house at night will not leave a single fowl alive, however numerous they may be. Ducks, geese, hens, chickens, turkeys, pigeons—all are alike its prey: it kills them by biting through the skull into the brain, which, with the blood, it prefers to any part of the flesh.

The haunt of the Polecat is usually some close copse or preserve not far from a farm. Here it makes its lair and larder, bringing hither the fruits of its nocturnal prowling expeditions. The examination of such lairs has shown that the Polecat does not limit itself to any kind of diet—that not only fowls and game, but eels, frogs, and toads serve for its meals. In one lair no less than forty large frogs and two toads were found alive, but so disabled by their captor as to be incapable of motion.

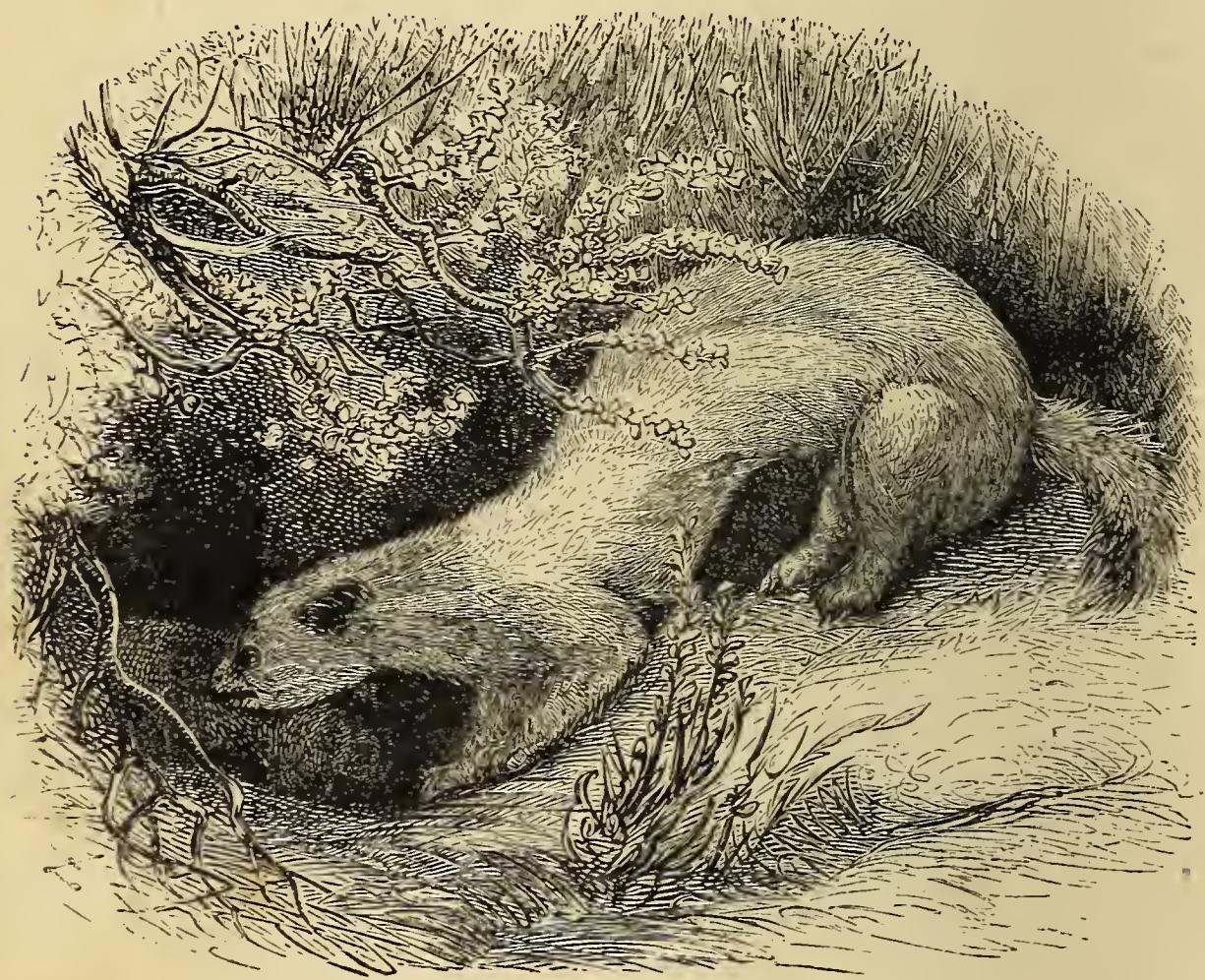
As some compensation to the farmer for its destruction of his fowls, the Polecat declares savage war against the rats, destroying them in great numbers. This bloodthirsty animal breeds once a year, in the month of May or June, making its nest generally in some rabbit-burrow, or rock crevice overgrown with herbage, and bringing forth from four to six young ones; but notwithstanding it is so prolific, it is now becoming rare.

THE FERRET.

THE Ferret is a native of Africa, but has long been domesticated in Europe, and has been used time out of mind in this country in the hunting of rabbits, and in clearing wheat-stacks, barns and granaries, of rats, mice, and other vermin. In form it greatly resembles the weasel, but is considerably larger, its body being about fourteen inches long, and the tail between five and six inches; and it is so slender in bulk as to be able to

pursue its prey through the smallest burrows. Its fur is either a yellowish white or brownish, and it has pink eyes.

The habits of the Ferret are said to be similar to those of the weasel ; but its natural habits can scarcely be observed in this country, where Ferrets are always kept in confinement to be used for hunting purposes. If suffered to go at large the climate of this country in winter would kill them ; and Ferrets which escape from



their keepers, as many do, either die when the cold weather comes, or return to their captivity. In order to preserve them from cold they are kept in snug boxes or hutches well supplied with soft hay, wool, or other warm material.

In rabbit hunting, especially when it is necessary to thin or utterly destroy the population of a warren, the services of Ferrets are in demand. The animals are first muzzled and then sent into the burrows, to the

terror of the poor rabbits, who take to headlong flight, and as they emerge from their holes are shot down by the sportsman or killed by their dogs. For this purpose almost any Ferret will do, as the rabbit is defenceless, and always takes to flight. But when rats have to be hunted, trained Ferrets are required who will not shrink from a fight, however severe, for rats at such times will do battle with the Ferret, and the pink-eyed assailant is now and then seen to turn tail and decline the combat—and if once severely bitten by the rat will hardly be induced to attack him again.

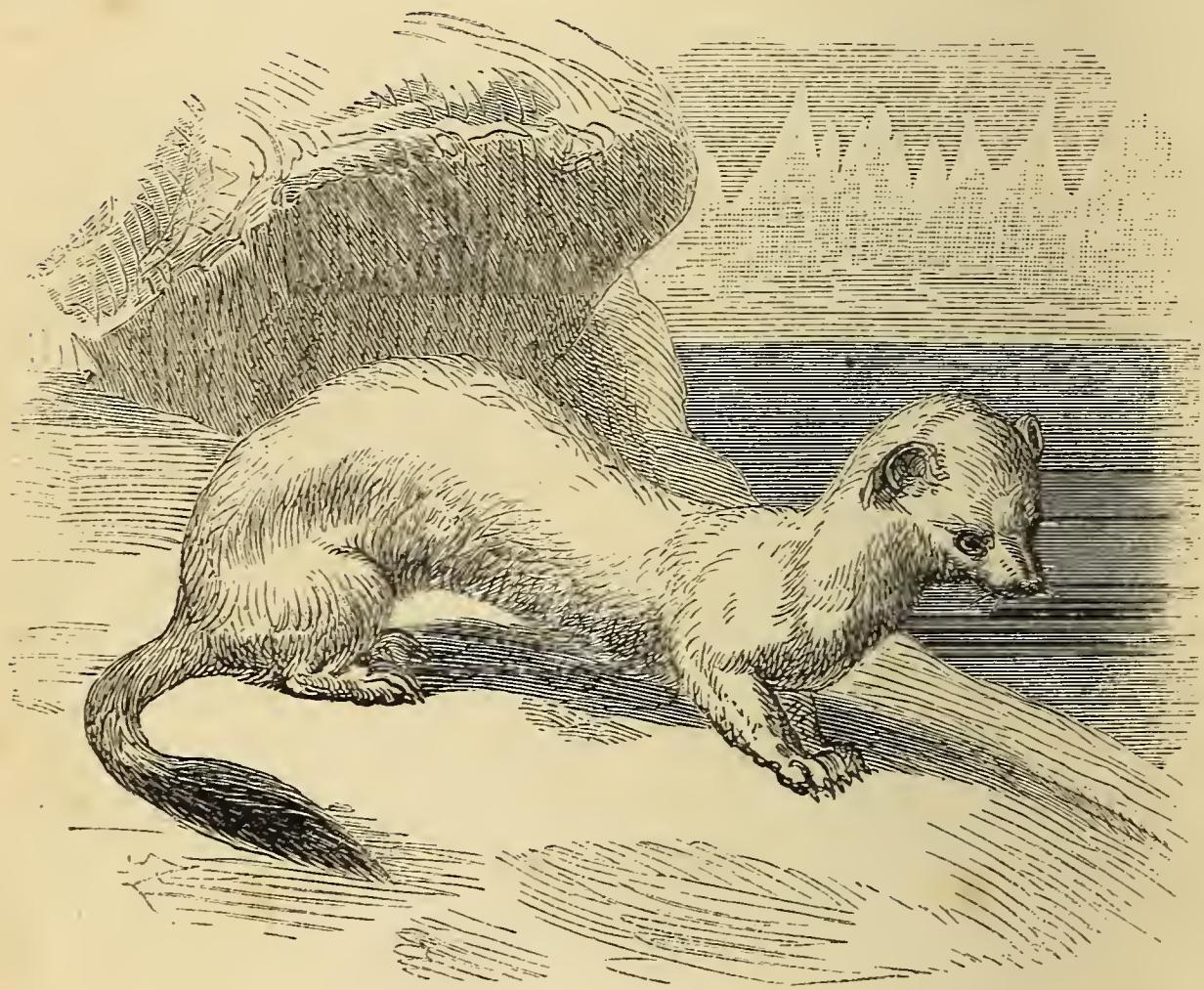
Ferrets have been sometimes thoroughly tamed, and one is mentioned who would follow his master like a dog, and track his footsteps from a distance. But it is not advisable to rely on their seeming tameness, as they are apt to turn upon their owners and assail them without any apparent cause or provocation ; nor is it wise to leave them at liberty in a dwelling—one having been known to attack and severely lacerate an infant in the cradle.

Ferrets breed twice a year, bearing six or eight young ones at a time. Besides the true Ferret, the mixed offspring of the Ferret and the Polecat—known as the Polecat Ferret—is often used by ratcatchers and destroyers of vermin : it is said to be even more efficient than the Ferret, and stands the severity of our climate better.

THE STOAT, OR ERMINE.

EVERY one is not aware that the “ermine of the judge,” the spotless fur which is an emblem of purity, is stripped from the body of the Stoat, which we persecute and destroy as vermin. The Stoat and Ermine are, however, one and the same animal, a member of the Weasel tribe, measuring about fourteen or fifteen inches in length, of which the tail is about four inches. The

Stoat has to be described under two aspects : in summer time its colour is a dull reddish-brown on the head, back and sides, the lower parts being white ; but in winter the fur grows gradually whiter, and when the cold is severe the whole becomes of a creamy white, deepening to yellow on the hinder parts : both in winter and summer the end of the tail is black. This remarkable change takes place but occasionally in the climate of England, but in the mountainous parts of



Scotland, and in the high latitudes of North America, and in Russia, Norway, Sweden and Lapland, where these animals are met with in great numbers, it is complete and universal. The importation of Ermine skins from the north of Europe alone has in some years nearly reached to two hundred thousand ; comparatively few are imported from North America, where their capture is less remunerative to the trapper. The animals are caught in traps so contrived as to kill them

without injuring their delicate coats ; were they shot or hunted, they would be of little or no value.

The Stoat lives by preying upon various creatures, some of which are much larger than itself. Like all the Weasel tribe, it is an audacious and persevering hunter, attacking hares and rabbits and other quadrupeds, and following them if necessary across ponds or streams of water, generally declining, however, to follow the Water-Vole when the latter takes refuge in the brook. It devours eggs and young birds from the nest, climbing trees and ransacking the close-set hedge with the greatest ease ; it kills numbers of young rabbits, and feeds on reptiles of all kinds ; it has, further, the evil reputation of destroying the game in preserves, and is invariably destroyed by keepers whenever it comes within range of their guns. Numbers of Stoats are caught in traps, and whenever we come upon the "keeper's tree" we are sure to see the dead bodies of Stoats nailed up among the trophies.

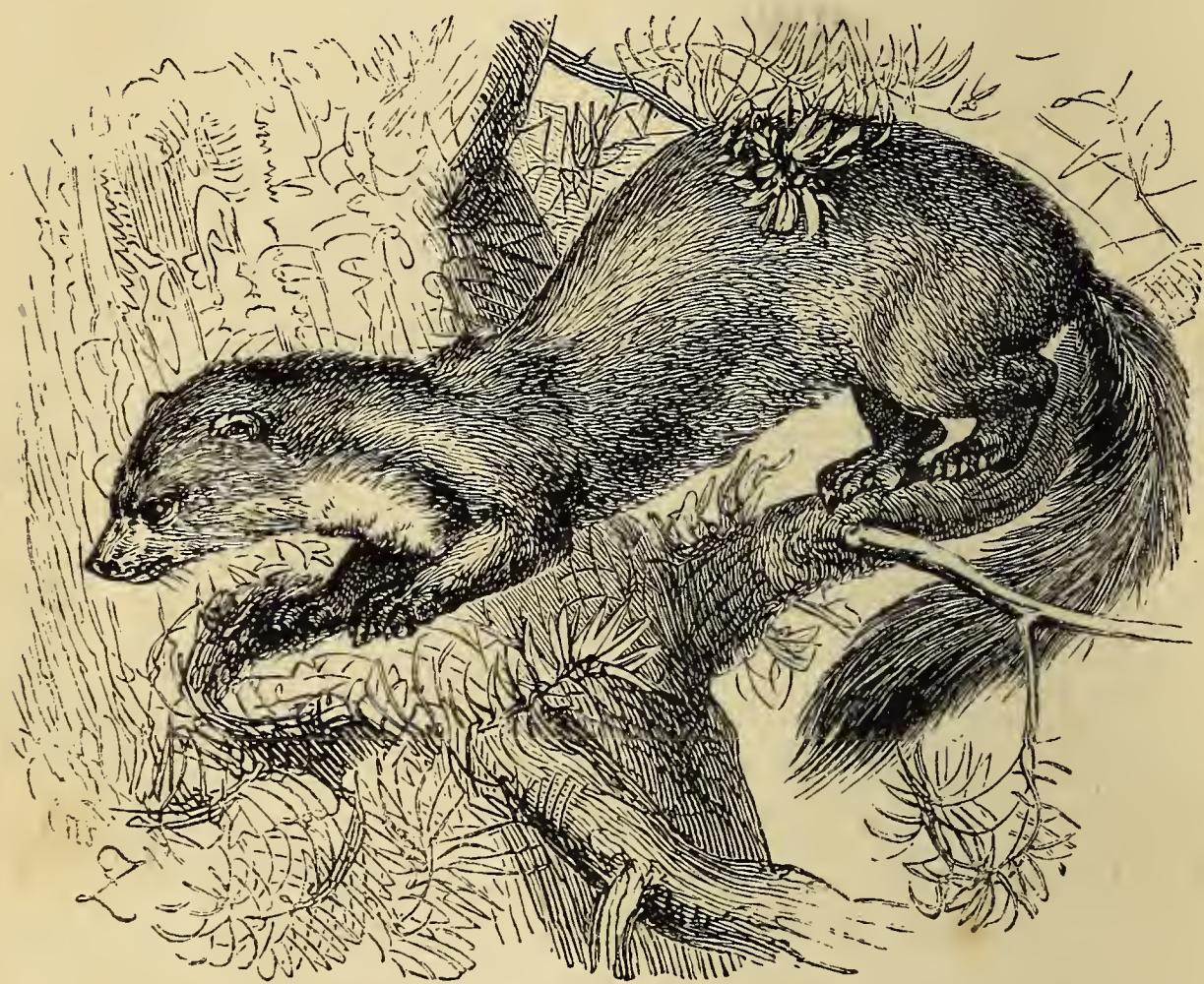
When providing for her young the female Stoat stores her lair with provisions of various kinds and in great plenty : in one nest have been found five hares and four rabbits ; in another a collection of birds, frogs, and field-mice, all neatly packed away ; and in a third were found a rabbit, a hare, a dozen mice, and the remains of a woodcock. In this country the Stoat produces five or six young ones in April or May, but is said to be more prolific in North America, bringing forth ten or twelve young at a time.

Stoats have been frequently tamed, and are amusingly playful with those who treat them with kindness.

THE PINE MARTEN.

THE Pine Marten, a well-known member of the Weasel family, derives its name from its habit of climbing pine trees in search of prey. It is about

eighteen inches in length, exclusive of the tail, which measures ten inches more, and is furnished with long bushy hair, deeper in colour than the brown fur of the body. It is extremely shy in its habits, and naturally timid, so that it is rarely caught sight of, but will fight fiercely when attacked. Like all the Weasel tribe it is wonderfully active and agile in its motions, and is as voracious and cruel as it is active : its victims are birds,



which it will pounce upon amid the branches after lying in wait in the vicinity of their nests, and it will plunder the nests both of eggs and young—the squirrel also is frequently its victim. To the farmer this Marten is often a sad plague, by the destruction it occasions among the fowls ; it is sometimes known to enter the fowl-house in the night, kill the old birds, and carry off the chickens or devour the eggs ; it will even enter the sheep-fold and kill the young lambs, destroying

many in succession by sucking their blood ; but not eating their flesh.

In summer time Martens often make their home in the deserted nest of some large bird, generally preferring that of the magpie as the most compact and snug. They sleep in the day-time, and prowl for prey during the night. The presence of a Marten in the nest of a bird is sometimes made known to the farmer or gamekeeper by the clamour made by whole troops of small birds, who gather round him as he sleeps, and in a manner mob him with their continuous outcries. When thus detected he runs the imminent risk of getting shot and nailed up to figure among the gamekeeper's ghastly collection of executed criminals. In winter Martens make themselves nests of dried grass and leaves in some rocky cleft, or other secret and secure place, and hither they drag their victims before feeding on them.

Martens are very rare in Great Britain, but are more plentiful throughout the whole of the north of Europe, and abound in some parts of North America. In the winter time they are much sought after by the hunters, their skins being at that season of considerable value : for the sake of preserving the skin undamaged the hunters prefer to take them in traps rather than to shoot them. In the backwoods of North America immense numbers of Martens are caught every winter by the Indian and half-caste trappers, by whom the numbers of these animals have been considerably reduced. The value of the Pine Marten's skin, when taken in the winter, is about half-a-crown.

The Pine Marten is sometimes confounded with the Beech Marten ; but they differ in colour, the Beech Marten having a whiter throat ; and they differ in form, the head of the Beech Marten being larger than that of the Pine Marten, and the legs smaller. Further, the Pine Marten produces but three or four young at a birth, while the Beech Marten brings forth six or seven.

THE PUMA.



THIS ferocious animal, unlike most of the cat kind, is marked with stripes or spots only during the first year of its existence ; as it grows up these marks disappear, and are succeeded by uniform colours. The body is of a silvery-fawn hue, sometimes reddish on the upper parts, and whitish beneath, and on the throat, chin, and upper lip. It measures, when full-grown, about four feet from nose to tail—the tail being about two feet more. The Puma is a strong, fierce, and active animal : it climbs trees with the greatest agility, and generally leaps from the branch of a tree upon its prey, which are swine, deer, sheep, or any defenceless animals that come in its way. It is rarely known to

attack a man, and never does so, even when pressed by famine, unless it can leap upon him unawares. At times, when distressed by hunger, it will follow travellers on their route through the forest, but will turn and walk away when it finds itself discovered. It is a terrible foe to the farmer, and has been known to destroy fifty sheep in a night, sucking only a little blood from each. It is choice in its diet: when it has eaten a part of its slaughtered prey, it covers up the remainder carefully with leaves; but if, on its return, it finds that the hoard has been touched by any other animal, it will eat no more of it. The Puma is found both in North and South America, and is said to have been once common throughout the whole continent; it is now, however, less numerous, owing to the hatred with which it is regarded by the European settlers, and their practice of hunting it to death. The modes of hunting the Puma differ in different parts of America. In the Spanish settlements he is caught by the lasso (a rope with a noose at the end of it), and dragged at the heels of the hunter's horse, while he is at the same time worried and torn by dogs until he is exhausted, when the hunter descends and knocks him on the head. In the North he is generally driven by the dogs to take refuge in a tree, and there shot with the rifle. The flesh of the Puma is accounted choice food among those who are accustomed to it; and the skin makes excellent leather for the manufacture of ladies' shoes and men's gloves.

Although so fierce and sanguinary in its wild state, the Puma, if taken young, can be perfectly tamed; and instances have been known, both in America and this country, of Pumas who were entirely domesticated, and followed their masters about like dogs. Mr. Bennett, speaking of one formerly in the Tower Menagerie, says: "His manners closely resemble those of the domestic cat; like it, he is extremely fond of being noticed, raises his back and stretches his limbs beneath the

hand that caresses him, and expresses his pleasure by the same quiet and complacent purring."

There are few animals which have had so many names as the Puma. When first discovered by Europeans they called it the American Lion, from its tawny colour ; then it was called the Panther, from the resemblance of its habits to those of the Panther, or Leopard. Then the French settlers called it the Cougar, by which name it is still sometimes mentioned in the reports of travellers. By the American woodsmen of the present day it is called the "Painter," which word is probably a corruption of "Panther."

THE CHETAH (HUNTING LEOPARD).

THE Chetah is a handsome, stately animal, rather larger than the leopard, and standing much higher from the ground, owing to its superior length of limb. Though called the Hunting Leopard, it has not much claim to the title of a Leopard, which it resembles only in its spotted hide—not in contour or structure. It is supposed to form a link between the cat and dog races, and that not without reason, seeing that its method of hunting is the feline method, and its aptitude for domestication, and its docility and obedience, give it much of the character of the dog. Professor Owen, however, has declared it to be a true cat. The fur of the Chetah is coarser than that of the leopard, and is studded with numerous round black spots. Along the neck and the ridge of the back runs a thin mane, to which it owes the designation *tubata*, or crested ; the hair of the lower part of the cheek is long, and there is a deep black line running from the corners of the mouth to each eye, giving a wild aspect to the face.

The Chetah lives by the slaughter of deer, antelopes, and other defenceless animals of the plain, whom it

would not have the power to overtake in fair pursuit, but upon whom it steals unawares, crawling, crouching, and hiding itself by any artifice in its approaches, and then bounding suddenly upon its victim by a single spring, and fastening with fatal grip upon the throat. The inhabitants of those parts of Asia and Africa where the Chetah is native have taken advantage of its dexterity in hunting, and have trained it to hunt for their



profit. When prosecuting their sport, the Chetah is temporarily blinded with a hood, and driven to the hunting-ground in a light car, in charge of keepers. No sooner is the game in sight than the Chetah's head is turned in the proper direction, the hood removed from his eyes, and he slips off silently and warily, that his victim may not perceive his approach. As soon as he has killed the game the keepers hasten up, and lure him from it by means of some food of which he is

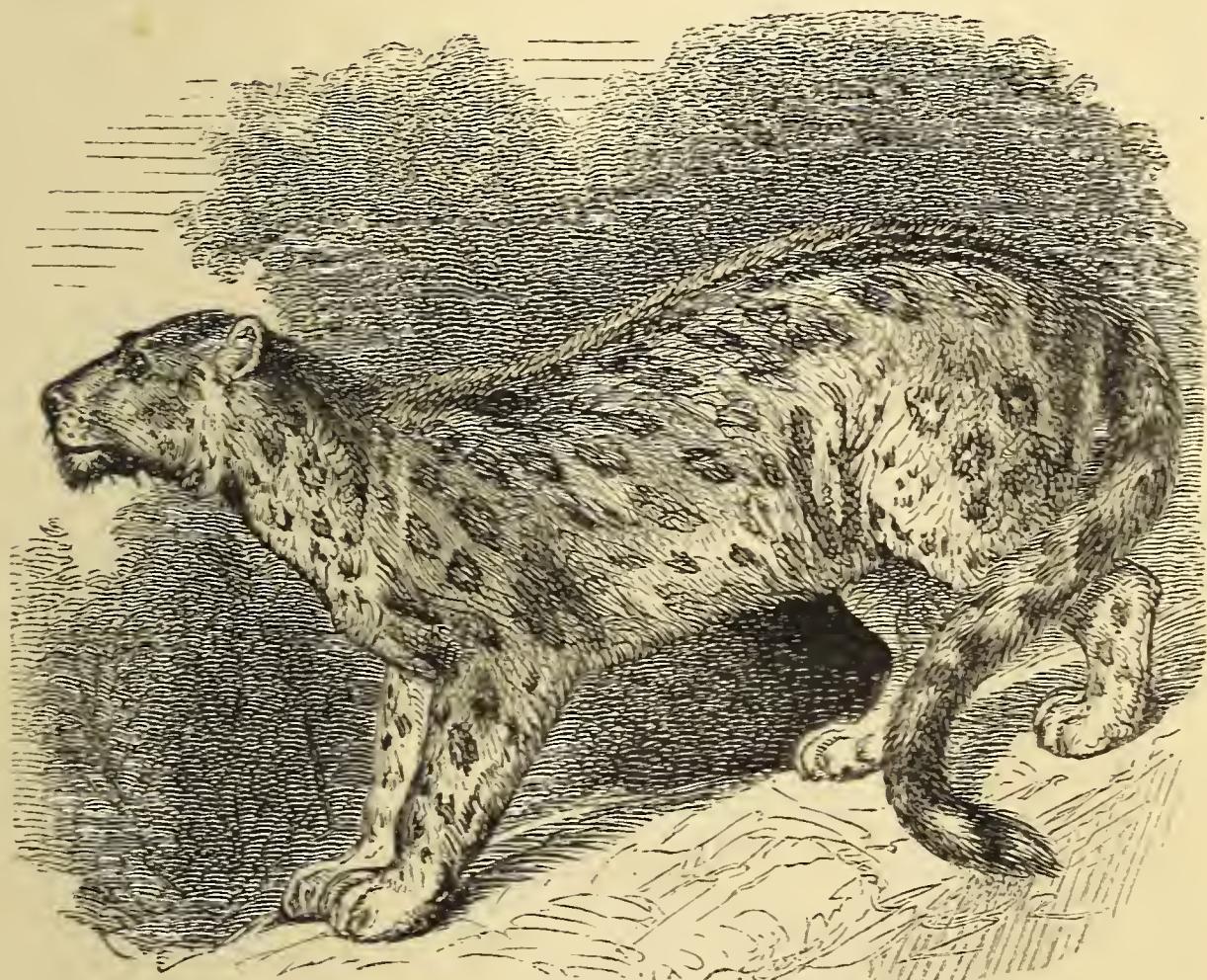
fond ; then they take him back to the car and blind him for another experiment. It happens not unfrequently that the Chetah fails in catching the game, owing to its having taken the alarm and made off before he could come up with it : in this case the four-footed hunter does not give chase, but returns disappointed and chapfallen to its master.

In Asia, the Chetah is a native of India, Sumatra, and Persia ; and in Africa it is found in Senegal and at the Cape of Good Hope. In the neighbourhood of the Cape it is often tamed and domesticated, and becomes so docile and harmless, that, like the domestic cat or dog, it is allowed to wander anywhere at its will.

THE OUNCE.

THE descriptions which have been given of the Leopard, so far as regards its strength of limb, its habits in the wild state, its gracefulness of motion, and its remarkably playful character in confinement, would seem to apply also to the Ounce, which was considered by Cuvier and other distinguished naturalists to be but a variety of the leopard, though it is now recognized as a truly distinct species. It is about the same size as the African leopard, and would be taken for a leopard if viewed at a little distance. The points of difference are, however, sufficiently perceptible on a nearer view : the fur of the Ounce is more abundant than that of the leopard, it is not so fine or soft to the touch, and it is differently marked—the rosette-shaped spots on the body not being so clearly defined, while, lying in rows and close together, they assume somewhat the appearance of stripes ; there is a large black spot behind the ears, and the tail is much more bushy than that of the leopard. Further, the Ounce is throughout of a paler hue than the leopard,

the general colour of the body being a greyish white, slightly tinged with yellow, and, as is the case with most animals, the upper parts much deeper in colour than the lower.



The Ounce is found in some parts of Asia, and fine specimens have been brought from the shores of the Persian Gulf. From the thickness of its fur it is supposed to be fitted for a life in cool and mountainous districts.

THE EUROPEAN LYNX.

THE Lynx, proverbial for its quick piercing sight, is found in the southern parts of Europe, from the Pyrenees to the confines of Asia; it is said by some writers to be abundant also in the northern Asiatic forests.

When full grown it is about three feet in length—the tail having a length of only six or seven inches. Its fur is of a dull reddish grey upon the back and sides, and whitish on the under parts; it is marked with oblong spots of deeper colour on the body, and with circular spots of the same deeper hue on the limbs. It lives by preying upon smaller animals, such as hares, rabbits, squirrels, and sometimes upon lambs; it also



preys upon birds, which it hunts among the branches of trees—climbing dexterously, and with the stealthiness of a cat. Its method of hunting is altogether feline; it does not give chase to its victims, having no very extraordinary speed, or the powers of endurance which would be necessary for a long pursuit; but either lies in wait or steals towards them under covert, springing upon them with a sudden bound from a distance of many feet.

The fur of the Lynx is valuable for the purposes of dress, and is constantly in demand. In consequence, the animal is much hunted for its fur—the hunters always carrying on their operations in winter, when the coating of fur is much thicker than it is in the warm summer weather. The most valuable skins are brought from those countries inhabited by the Lynx in which the climate is coldest.

There is another variety of this species, known as the Southern or Pardine Lynx—called Pardine from the spots on its fur resembling those of the leopard. It is found in Sardinia, Spain, Portugal, and other southern-most portions of the Continent of Europe, and, like the common Lynx, is also hunted for its fur.

THE EGYPTIAN CAT.

THE Egyptian Cat is about the size of our common domestic cat, and is supposed to be the original stock whence the race with which we are so familiar descended—though it does not appear to be proved that the supposition is the true one. The Egyptian Cat is, according to M. Rüppell, identical with the cat of Nubia, which he found inhabiting a wild rocky district west of the Nile. Its colour is a yellowish grey, approaching to brown, the colour being deeper on the back than on the sides, and shading off into white along the throat and on the under portions of the body and limbs. The body is streaked and spotted in places with hues approaching to black.

The ancient Egyptians paid marked and superstitious reverence to their cats: they not only honoured them highly during their lives, but embalmed them with sweet spices and costly drugs when dead, and laid them to rest in magnificent tombs. The number of cats thus honourably disposed of after death must have

been enormous : numerous specimens of mummied cats have been brought by travellers to this country ; and they show, by the care which was evidently bestowed in embalming them, that their remains received far more attention and respect than those of the human population of the ordinary class.

In Pennant's "Leges Walliæ" there is a curious passage concerning cats, which has been quoted as



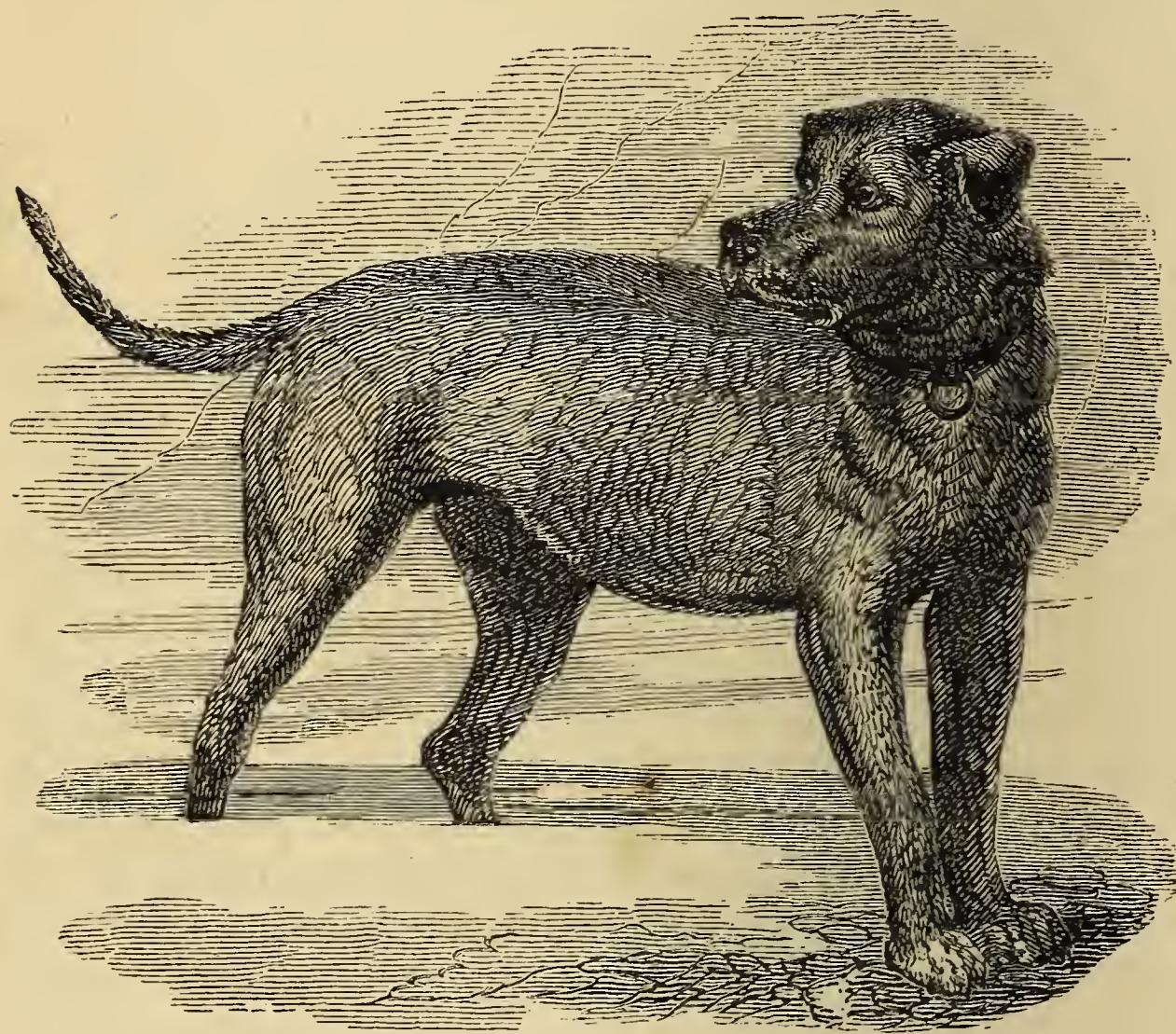
tending to disprove the common opinion that the domestic cats of Britain are descended from the wild cats supposed to be indigenous in these islands. The writer is speaking of Howel the Good, who died in the year 948, and who made laws relating to animals. The passage in question runs thus : "If any one stole or killed the cat that guarded the prince's granary, he was to forfeit a milch ewe, its fleece and lamb ; or as much wheat as when poured on the cat suspended by its tail

(the head touching the floor) would make a heap high enough to cover the tip of the former." From this passage, showing as it does the value set upon cats in olden times, it has been inferred that cats were not aborigines of these islands, or known to the earliest inhabitants—and that therefore the common domestic cat must have had some other origin. Whether or no that origin is to be referred to Egypt is by no means clear.

THE ST. BERNARD'S DOG.

THE St. Bernard's Dog, which is a large breed, equalling the British mastiff in size, obtained its name from the monastery of St. Bernard, where a number of these dogs have been kept for many years, and trained to render assistance to travellers overtaken by snow-storms while passing the Alps. The Hospice of St. Bernard is situated at a height of more than eight thousand feet above the level of the sea, and its climate is that of perpetual winter. The monastery was founded for the purpose of relieving and sheltering travellers ; and the monks who live in it have the care of the dogs. Whenever a storm sets in, the convent bell is kept ringing while it lasts, in order that the sound may assist in guiding the traveller ; at the same time some of the monks go forth, accompanied by the dogs, to carry assistance where it may be needed. It happens frequently that a violent wind blows while the snow is falling, so that all traces of the mountain paths are quickly buried beneath the drift ; and wanderers thus overtaken know not which way to turn. Bewildered—fearful of proceeding, lest they should fall over some precipice—stupified, and drowsy with cold, they lie or crouch down to sleep—a sleep which if long indulged in is sure to end in death. In this hour of

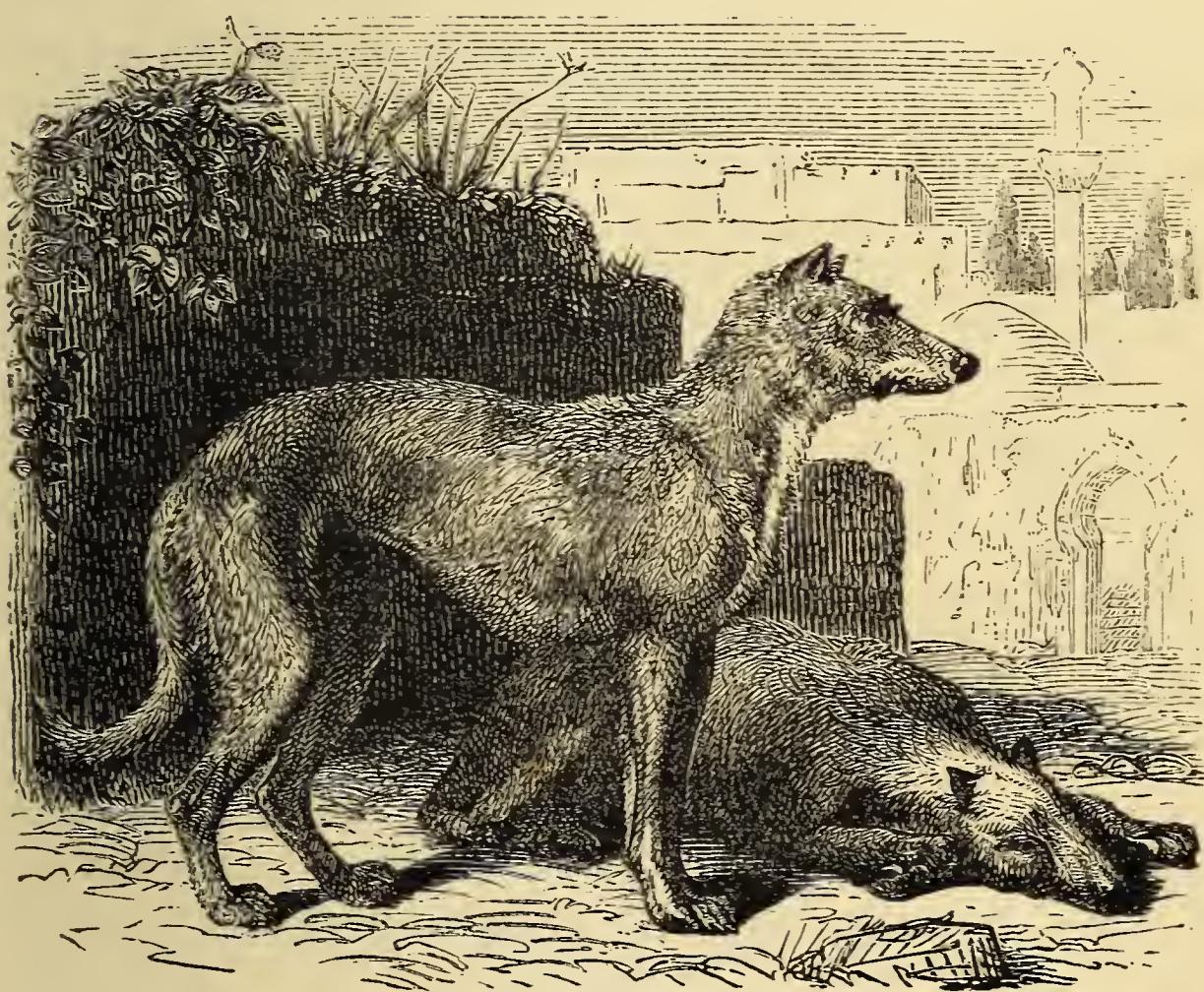
their fearful peril, numbers have been saved from destruction by the sagacity of the dogs of St. Bernard. Encouraged by the monks, these powerful dogs scour the mountain in all directions, and readily discover by their scent the exact spot where any human being lies buried below. Then they scratch away the snow with their paws, and if it is a grown person whom they find beneath, they will lie down on his breast to keep him



warm until the monks come up—at the same time barking loudly and continuously until help arrives ; if it is a child, they will seize it by the garments and run off with it to the convent. These noble dogs take a delight in their errands of mercy, and will of their own accord go out in search of lost travellers : in these excursions the dog has a flask of strong cordial fastened to his neck, to which the sufferer may help himself if he is able.

One of these animals saved the lives of no less than twenty-two persons, and was killed at last, while attempting to save a poor traveller, who was buried with him by the fall of an avalanche.

THE DOGS OF SYRIA AND THE EAST.



IN ancient times Dogs were very numerous in all the towns and cities of the Jews. Being reckoned unclean animals, they were not admitted into the house, but were encouraged as watchful guardians, and regularly fed by their owners. Their habit seems to have been to quit the city during the day, to hunt or forage in the neighbourhood, and to return at nightfall. They were held by the Jews in low estimation,—the very word “dog” being a term of contempt. But the dogs,

lightly as they were, and still are, esteemed, have survived the ancient splendours of Palestine and the glories of her cities, and to all appearance are as numerous, or nearly so, as they ever were. They swarm in the cities and towns and ruined villages, and they are tolerated by Turks, Arabs, and Christians for the important service they render in devouring the offal cast out into the streets, and thus preventing its putrefaction —performing in fact the function of scavengers in the highways. Dean Stanley relates, in his “*Sinai and Palestine*” that he saw on the very site of Jezreel the descendants of the dogs that devoured Jezebel, prowling on the mounds without the walls for offal and carrion thrown out to them to consume.

These dogs, abundant as they are in all eastern cities, are no favourites, either with the native citizens or with travellers from Europe. They are apt to attack strangers who approach them carelessly, and get kicked and cudgelled for their boldness ; they swarm in the most populous districts—the females rearing their pups in the public paths, and defending them with undaunted courage from all assailants—and they quarrel ferociously among themselves for any garbage cast out from a dwelling. They have little that is prepossessing in their appearance ; and inasmuch as they are not mentioned in the classified lists of any naturalist that we know of, being probably for the most part mongrels and “curs of low degree,” they hardly admit of a definite description. That they are not wanting in sagacity, however, is well known. Among a number of traits that might be cited in their favour we select the following from Tristram’s “*Land of Israel*:” “In front of the grim turret that served for a guard-house was a collection of old orange-boxes and crates, thickly peopled by a garrison of dogs of low degree, whose attachment to the spot was certainly not purchased by the loaves and fishes which fell to their lot. One of the party must indeed have had hard times, for she had a family

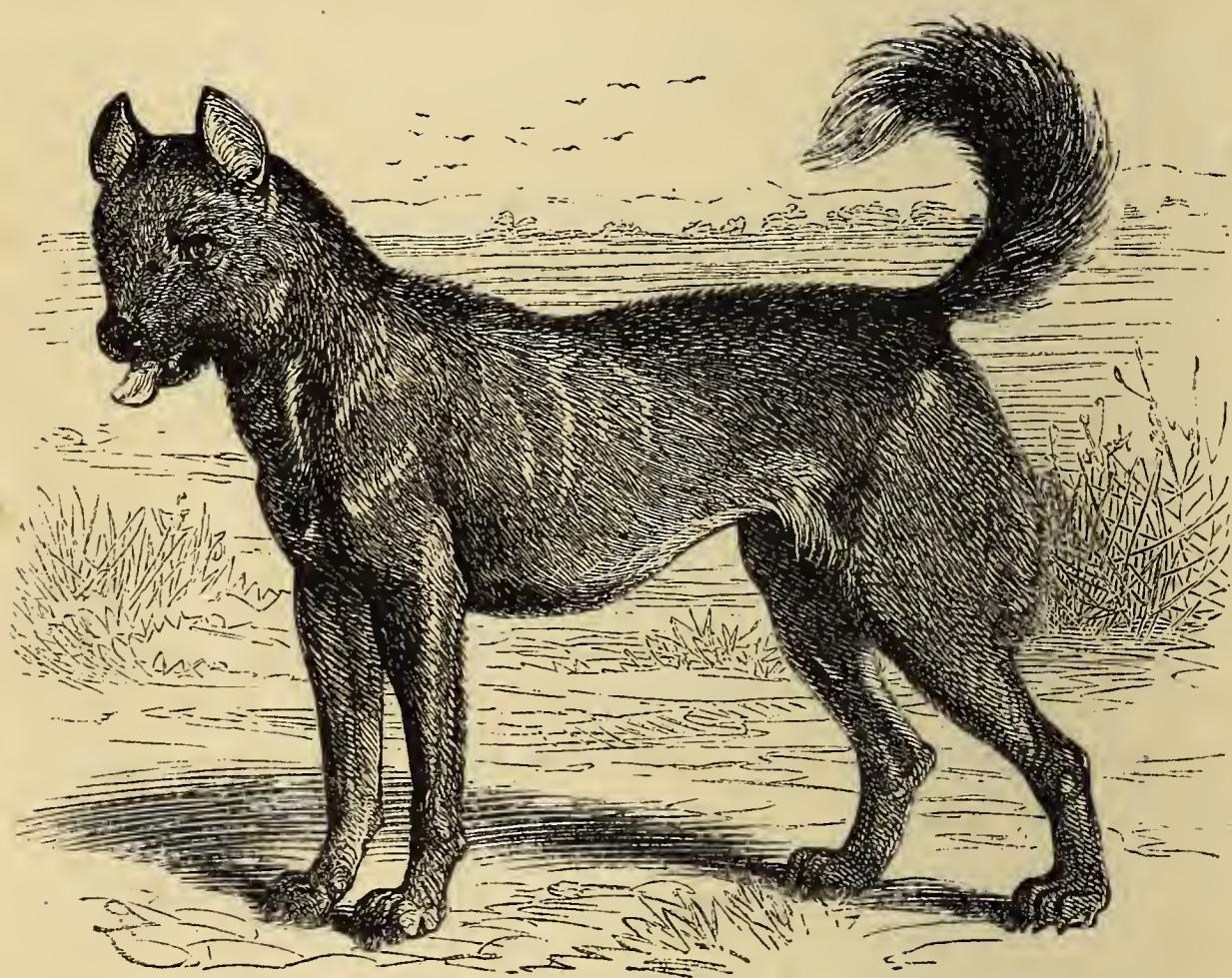
of no less than five dependent on her exertions, and on the superfluities of the sentries' mess. With a sagacity almost more than canine, the poor gaunt creature had scarcely seen our tents pitched before she came over with all her litter, and deposited them in front of our tent. At once she scanned the features of every member of the encampment, and introduced herself to our notice. During the week of our stay she never quitted her post, nor attempted any depredations on the kitchen-tent, which might have led to her banishment. Night and day she proved a faithful and vigilant sentry, permitting no stranger, human or canine, European or Oriental, to approach the tents without permission, but keeping on the most familiar terms with ourselves and our servants. On the morning of our departure, no sooner had she seen our camp struck, than she conveyed her puppies back to their old quarters in the orange-box, and no entreaties or bribes could induce her to accompany us. On three subsequent visits to Jerusalem, this same dog acted in a similar way, though no longer embarrassed by family cares, and would on no account permit any strange dog, nor even her companions at the guard-house, to approach within the tent-ropes."

THE DINGO.

THE Dingo is the Wild Dog of Australia, the formidable foe of the sheep-farmer, among whose flocks he commits the most fearful ravages. In figure and aspect he bears considerable resemblance to the wolf: he is about two feet in height when standing erect, and about two and a half feet in length, exclusive of the tail; the head is shaped like that of the fox, the ears short and erect, with whiskers from one to two inches in length on the muzzle. The general colour of the upper parts is pale brown, growing lighter towards the belly; the

hind part of the fore-legs and the fore part of the hinder ones white, as are the feet of both ; the tail is of a moderate length, somewhat bushy, but in a less degree than that of the fox.

The Dingoes, like wolves, hunt in packs, and it is said that each pack has its own hunting-ground, never intruding upon the territory of other neighbouring packs, or suffering any intrusion upon their own. They



are the worst enemies of the sheep, which they will either hunt down in their pastures or attack and slaughter when folded at night. The colonists generally unite in making common war against them, and destroy them whenever they have the opportunity ; by this means their numbers are kept down, and they are now not nearly so numerous and destructive as they formerly were. The early settlers suffered terribly from these pests, which often, by the havoc they made, reduced the number of their flocks by hundreds.

The Dingo is not naturally courageous, and takes to

flight when danger is near ; but when it finds that flight is of no avail it invariably turns on the pursuer and fights with savage fury. Again, if it can save itself neither by flight nor fighting, it often has recourse to a third expedient, by feigning to be dead. Their tenacity of life is extraordinary. A Dingo which had been cudgelled so long by the hunter that all its bones were supposed to be broken, was seen, after the departure of the enemy, to get up, shake itself, and slink off into the bush.

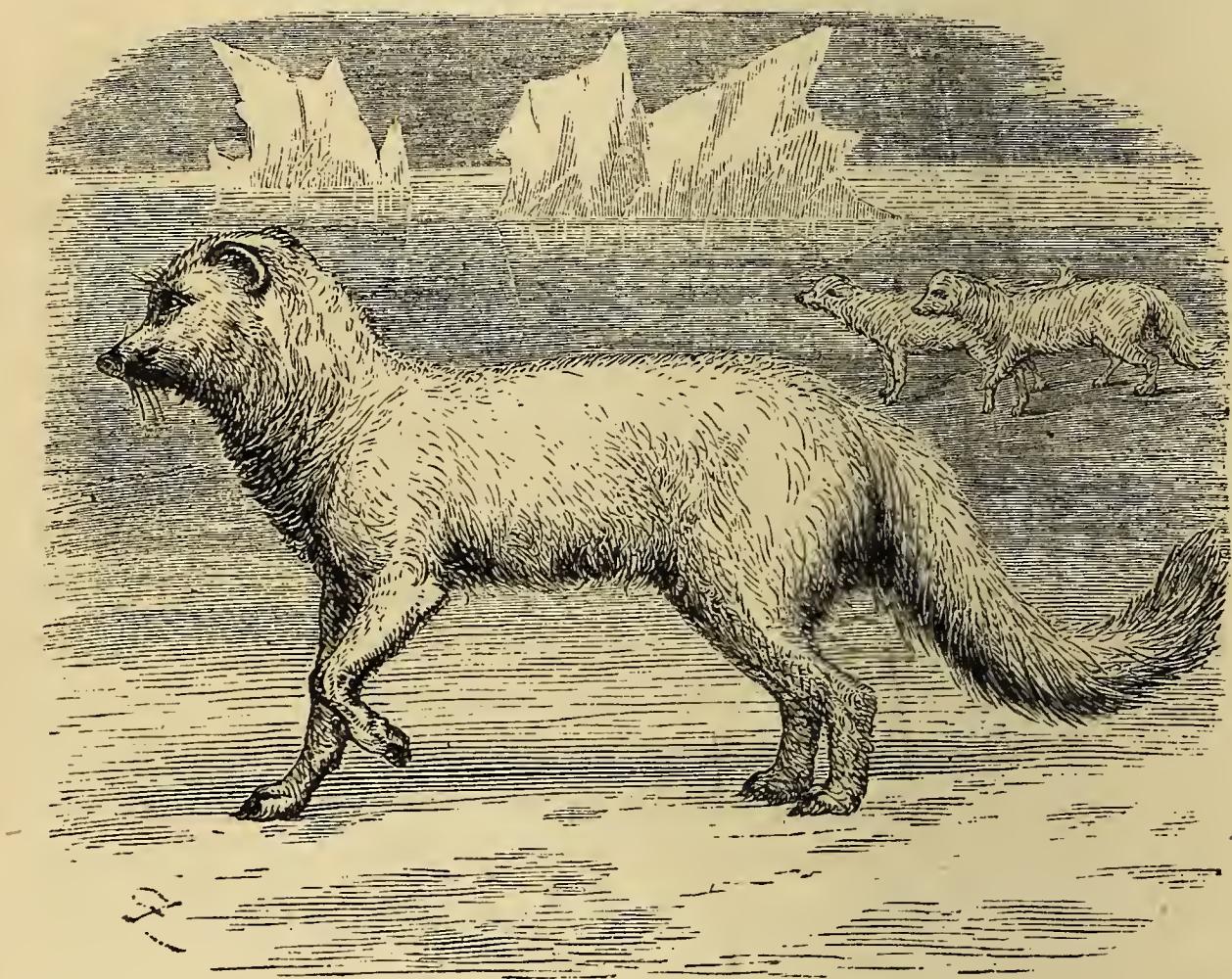
The attempts which have been made to tame and domesticate the Dingo have not been very encouraging. In confinement they show themselves treacherous and cowardly—snapping and biting whenever they can attack a person off his guard, and then running to hide in some secret place. A female Dingo which was kept by Governor Philip was described by him as having “much of the manners of the dog, but being of a savage nature, and not likely to change in this particular.” It lapped like other dogs, but neither barked nor growled if vexed and teased ; instead of which it would erect the hairs of the whole body like bristles, and show signs of fury : it was very eager after its prey, and was fond of rabbits or chickens raw, but would not touch cooked meat. A Dingo that was kept in the Zoological Gardens spent nearly the whole of its time, day and night, in doleful baying and howling : pure Dingoes reared in the Gardens were spotted.

It was formerly believed that these animals were aboriginal inhabitants of Australia ; but it is now agreed that they were carried thither from some other place—though whence they originally came is uncertain.

THE ARCTIC FOX.

THE Arctic Fox, one of the most remarkable of the species of Foxes, is not nearly so large as the English Fox, being not more than three feet in its entire length,

and weighing on the average but about eight pounds. It is an inhabitant of Iceland, Lapland, and Siberia, and of the high latitudes of North America. These Foxes are found in immense numbers on the shores of Hudson's Bay during the winter months, having migrated thither from the more northern districts late in the autumn : they are also plentiful in Behring's Straits. They are gregarious in their habits, preferring to locate



themselves on the sea shore, where they live in burrows which they form in sandy spots, generally about twenty or thirty of them together ; and in these burrows they breed and rear their young. They are said to be cleanly in their habits, keeping their burrows pure, and being themselves quite free from any offensive smell. They have the power of imitating the cries of various birds, and are supposed to use this faculty to decoy their feathery prey and lure them within their reach. They

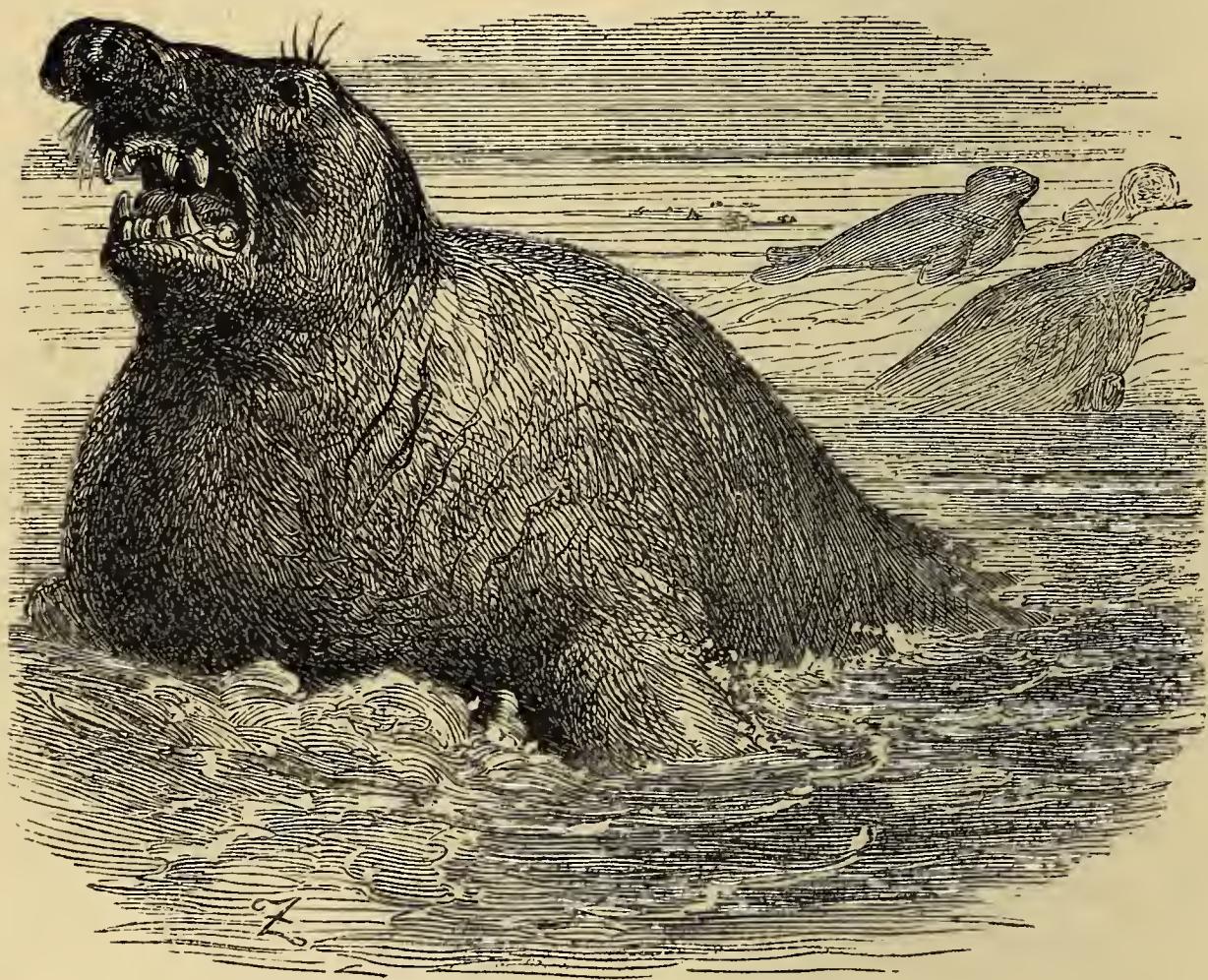
are, however, totally devoid of that superior cunning which characterises the English Fox, and are easily enticed into traps, which the hunters will even bait in their presence: Captain Lyons took fifteen of them from the same trap in the short space of four hours. When confined and humanely treated, they are easily tamed. When a tame one is fed by its owner, it seeks to hide the food given it; and if it have the opportunity will bury it, and heap snow firmly upon it by pressing it down with its nose.

The Arctic Fox is sought both for its fur and its flesh. The fur varies in colour according to the season of the year: during the summer months it is of a leaden or bluish grey, but sometimes of a dirty brown; as the season changes it becomes mottled; and in the depth of winter it is of a pure white—in which condition it is most valuable, being of a fine silky texture. Vast numbers of these animals fall victims to the hunters and trappers of North America, to whom it gives less labour than almost any other animal they pursue—allowing them to come within shot of it easily, or being snared with very little trouble. The flesh of this Fox is, when young, esteemed as good food: our arctic voyagers always regarded it as a luxury, and Captain Franklin's companions used to compare the flavour of it to that of the American hare.

THE ELEPHANT SEAL.

THIS enormous animal, measuring when full grown as much as thirty feet in length and fifteen feet in girth, is found in the seas of the southern hemisphere, and on the shores of South Shetland and other islands lying between 35 and 55 degrees of south latitude. It owes its name as much to its huge bulk as to the proboscis with which the male is provided. The colour

of the male is a bluish grey, that of the female being somewhat darker, and varied with yellow markings. These great Seals live in herds, and often leave the sea to sport and wallow in freshwater ponds and swamps : they are fond of sleeping on the soft sands of the shore, and when thus at rest have wakeful sentinels on the watch ; if alarmed, they make with all speed to the sea. They move with a sluggish, crawling gait, the whole



body of the animal trembling like a bag of jelly, and appear to be tired out with a march of twenty paces. The cry of the male is hoarse, and when he is excited or enraged is said to be dreadful ; it is only when under excitement that the proboscis is developed, which is done by the animal blowing through it in a furious manner ; at other times the nose has merely a roundish heavy appearance. The cry of the female has been compared to the lowing of a cow.

The Elephant Seals perform regular migrations in

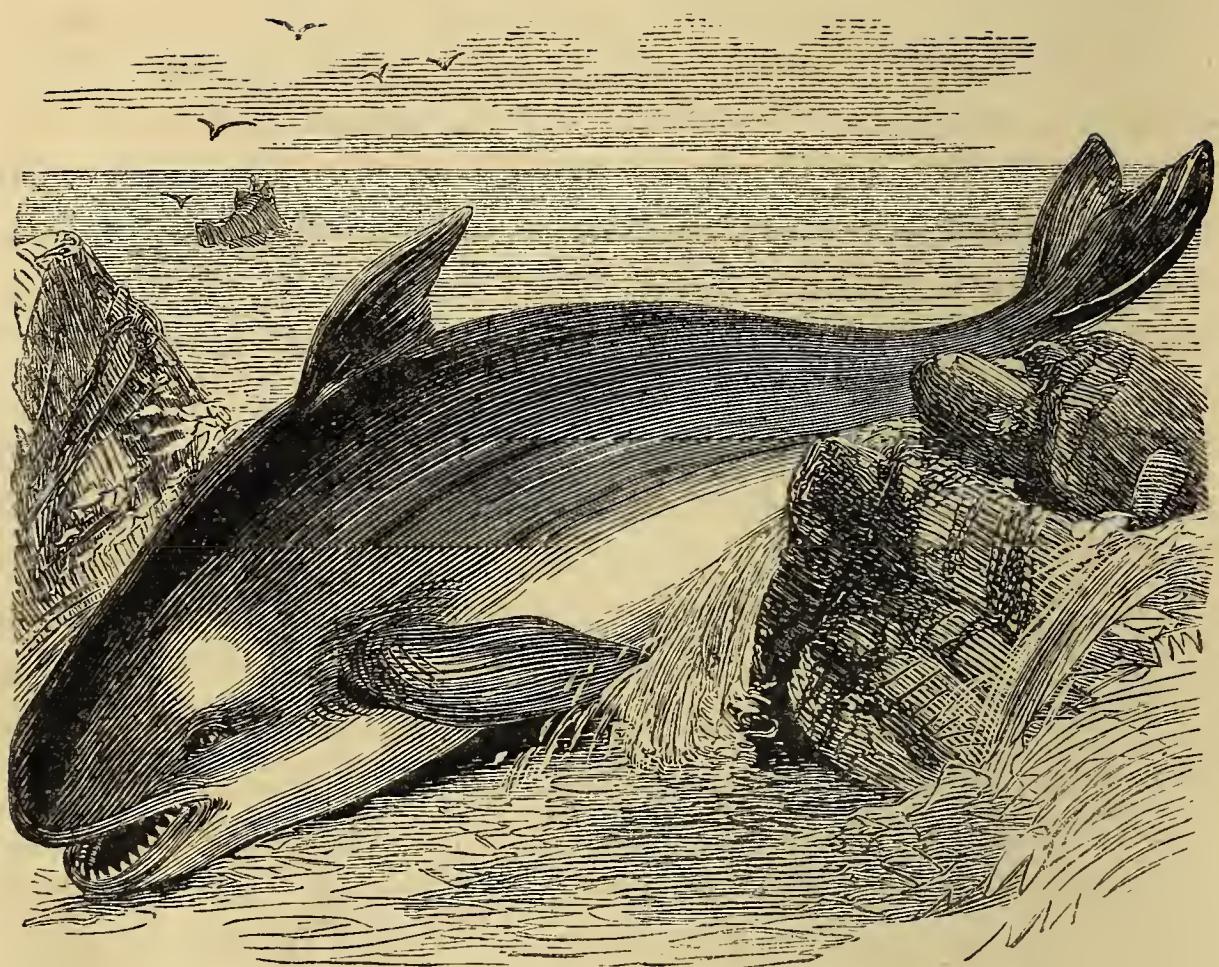
order to avoid the extremes of heat and cold. In the beginning of winter they quit the south for a more temperate clime, and retire southward again when summer sets in. Towards the close of summer the females bring forth their young, generally one, and more rarely two, at a birth. At this time the mothers are collected on the shore, where, lying on their side, they suckle their young—surrounded and guarded by the males. The young ones weigh about 70 lbs. at their birth, and double their size and weight in eight days: they attain their full size in three years, at which time the proboscis of the male makes its first appearance; after this period their increase is principally in fatness. During the breeding season bloody battles take place among the males, in which they inflict severe wounds, but rarely kill each other.

These Seals, notwithstanding their bulk and formidable appearance, are a harmless race, retreating from aggression, and never attacking man save in self-defence. They may be tamed without much trouble, and always manifest a gentle and affectionate disposition. A young one which was petted by an English sailor became so attached to his master, from the kind treatment received for a few months, that it would come to his call, allow him to mount upon its back and put his hands into its mouth.

The Elephant Seals are hunted and captured in large numbers for the sake of the fine clear oil which they furnish, and of which a single animal will sometimes yield as much as seventy gallons. Their skins are also of value; for though their fur is not prized, the hides are made into leather of extraordinary thickness and toughness, and well adapted for carriage and horse harness, and gearing-straps for machinery. Their tongues, when salted, are said to be savoury and wholesome.

The food of the Elephant Seal consists of fish and seaweed.

THE GRAMPUS.



THE Grampus is a large animal of the Whale tribe, sometimes met with of the length of thirty feet, and measuring a dozen feet in the girth. It is nearly black on the upper part of the body, and white on the under parts, having a white patch over the eyes. It is an inhabitant of the northern seas, but occasionally wanders southward, and from time to time is seen on our own coasts, and even in our firths and rivers, where it is generally chased and captured by our fishermen.

The Grampus is a most voracious animal, preferring to feed on the larger fish, such as the cod, the ling, the salmon, the halibut, and the skate, which it pursues in their migrations and devours in large numbers. It is known also to feed on the seal, the porpoise, and the dolphin, but it cares little for the smaller fry. In following the fish upon which it preys into the creeks and bays of our coasts, this ravenous feeder is now and then, though but rarely, caught in shallow places, owing

to the reflux of the tide, and it is then seen making violent efforts to escape. Such a sight is a signal for a general assault upon the monster by all who can wield a weapon—guns, muskets, harpoons, and pikes, are in sudden requisition, and every available boat puts off to the assault. If the tide rises quickly the Grampus is almost sure to escape, in spite of the bullets and pike-thrusts of his foes ; but it oftener happens that he is slain, and rewards his destroyers with the value of his blubber. On rare occasions it has happened that a Grampus-hunt of a more exciting kind has taken place in the Thames. In 1772 a Grampus ascended the river as far as Deptford, and though covered with wounds and struck with three harpoons, it dragged the boat which carried its persecutors at the rate of eight miles an hour against the tide. Since the above date several of large size have been caught in the same river.

Grampuses sometimes persecute the Greenland whale, and are seen thrashing its huge bulk with their tails, leaping high out of the water and striking it as they descend. This habit has obtained for them the names of Thresher and Killer. It has been asserted that the swordfish joins the Grampuses in their assaults upon the whale ; but that assertion seems to want corroboration.

THE NARWHAL.

THE Narwhal is found in the northern seas, and is well known on the coast of Greenland, where the inhabitants regard it as the forerunner of the Greenland whale. It is about thirteen feet in length when full grown, and is remarkable for the possession of a formidable straight horn or tusk, which springs from the upper jaw of the male, and protrudes in the form of a spiral tapering rod to the length of eight or ten feet. To this long tusk it owes its popular name of “Sea Unicorn.”

The use which the animal makes of its terrific weapon has not been definitely ascertained, but that it does use it constantly is evident, the tip of the tusk being always found smooth and polished. It has been known ere now to drive its tusk through the copper sheathing and solid timbers of a ship, the weapon having been found fast in the vessel's bottom on her arrival in port. The



female Narwhal has no such weapon, save in rare and exceptional instances.

The Narwhal's horn affords remarkably good ivory, valuable above most other sorts from its hardness and enduring whiteness. The oil drawn from the blubber is also of a superior quality, but is small in quantity, the largest specimens yielding but about half a ton. The

Narwhal is captured with comparative ease, as it cannot dive to any very considerable depth, and, in rising to the surface, is so exhausted as to be readily overcome. The Greenlanders prize its flesh, eating it both while fresh and after it has been carefully dried and prepared.

The Narwhal is nearly black on the upper surface of the body, which, however, is slightly streaked or patched with grey ; the sides are greyish-white marked with grey streaks, and the under parts are white. It has no back fin, and the pectoral fins are small and supposed to be of little use in swimming, beyond enabling the animal to maintain the balance of its body. It is a gregarious animal, living in herds of fifteen to twenty in number ; it seldom visits southern latitudes, though instances have been known of the Narwhal being driven on our own coasts.

In former times the horn of the Narwhal was foolishly regarded as that of the veritable unicorn. Fabulous virtues were ascribed to it ; it was reckoned a certain antidote against poisons of all kinds ; and so great was the faith in its efficacy that even a few shavings of it were sold at a high price.

THE SPERMACETI WHALE.

THE Sperm Whale, or Cachalot, is one of the largest of the whales, sometimes measuring over fourscore feet in length. It is an unshapely-looking animal, with a huge head one-third the length of its body, and a large hump on its back tapering towards the tail. The colour of the back and sides is a green-grey black, the under portions being a greyish-white. It is found in nearly all parts of the ocean, with the exception of the Polar seas, and ere now has been stranded on our own shores. The whale-fishers who hunt it seek for it in the deepest waters, and spare no pains to ensure its capture. It is

sometimes met with alone, but, being a gregarious animal, is generally encountered in herds or "schools" often comprising several hundreds. Usually the "school" consists of two bands, one of males, the other of females: when the male Cachalot is struck by the harpooner, the rest of the band take to flight, and leave their unfortunate companion to his fate; but, when a female is so struck, the other females will swim round her as if en-



couraging her, and, owing to their sympathy, they often get attacked in their turn; and it will happen that when the whale-boats are numerous, nearly the whole herd will fall victims rather than abandon their wounded companions.

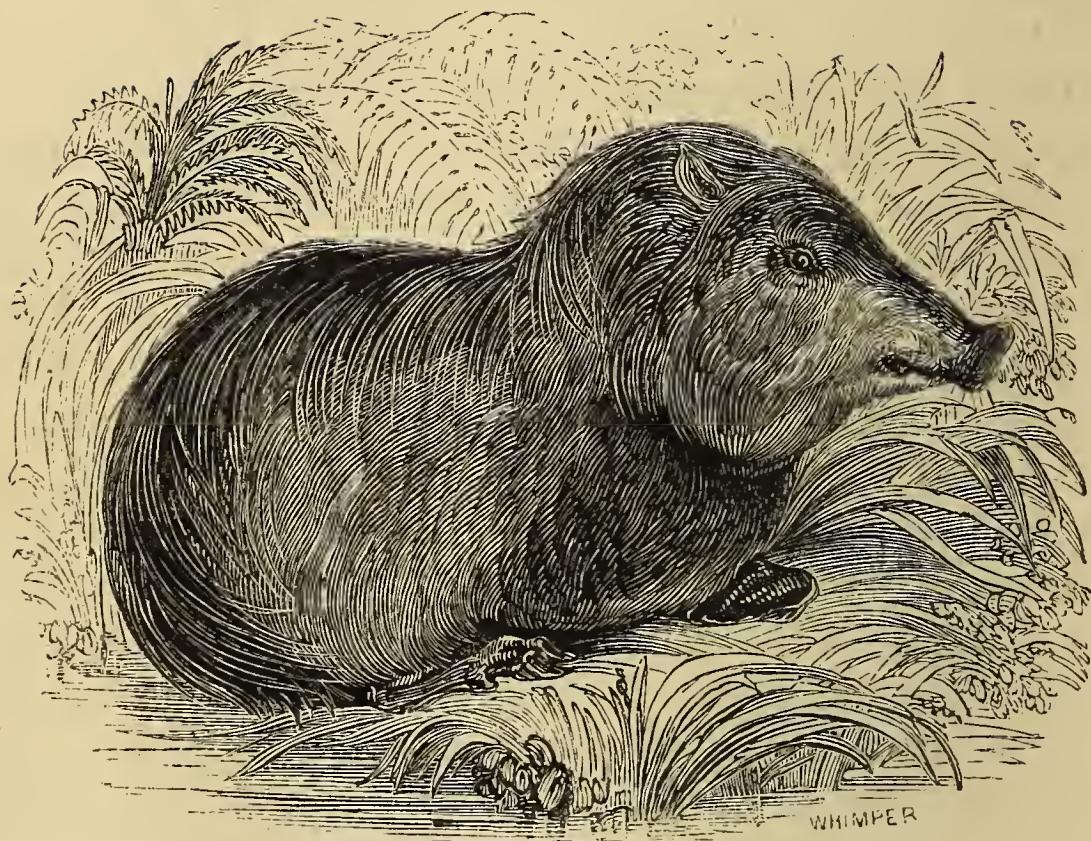
The whale-fishers know the Sperm Whale at the distance of several miles by its peculiar mode of spouting—the water being thrown from its snout at an angle of forty-five degrees—a respiration lasting three seconds, with an interval of ten seconds between each. The spout-

ing occupies from ten to eleven minutes altogether, and is repeated at intervals of little more than an hour each. When harpooned, the animal rushes along the surface of the water at the rate of ten or twelve miles an hour, dragging the whale-boats along with it; or, if it has lately spouted, it dives rapidly to the bottom, taking with it miles of the line, to rise again perhaps in a quarter where it is least expected. The conduct of these huge creatures when hunted is very various. Sometimes they are killed at once, as they lie on the water, offering little or no resistance, and neither diving nor making off; at other times they will fight with desperate fury, dashing at the whale-boats and sinking them one after another. A few years ago the American ship *Essex* was struck by one of these whales, which assaulted her again and again, and crushed in her timbers by the force of its blows; and though the crew escaped for the time in their boats, nearly all of them eventually perished.

The Cachalot is valued for its oil, which, though less in quantity than that obtained from the Greenland whale, is much superior in quality; and it is still more valued for its spermaceti, of which near a hundred barrels are sometimes taken from a single animal. The spermaceti is taken in a liquid state from the huge head of the whale, the sailors baling it out in buckets; when first obtained it looks like clear oil, but after a time the spermaceti separates from the oil, and is packed away in different vessels, which are afterwards consigned to the refiner. Another valuable product of the Cachalot is ambergris, which, however, is not found in healthy animals, and is therefore supposed to be a morbid secretion; it is much used in the preparation of perfumes, and will command a good price, though it is not nearly so valuable as it once was.

The Sperm Whale seems to have no particular period for breeding, young whales, or cubs, being found at all seasons of the year: one only is produced at a birth.

THE PECCARY.



THE Common Peccary is a small pig-like animal about a yard in length, and weighing from fifty to sixty pounds ; it is found in great numbers in the Brazils, and neighbouring countries of South America. It is of a grizzled brown colour, with the exception of a white stripe over the neck, which has obtained for it the designation of *torquatus*, or "collared." It is formidable, from its short lancet-shaped tusks, which cut like knives, from its indomitable courage, and from its great numbers ; the Peccaries always living in herds, sometimes amounting to several hundreds. The most savage animals are afraid to attack these herds, even the leopard and the jaguar shrinking from the contest. The hunter who should unfortunately be surrounded by them would inevitably be cut to pieces by their tusks, if he did not find shelter in the branches of some friendly tree ; for the Peccaries confront every danger, and will persist in doing battle against the huntsmen

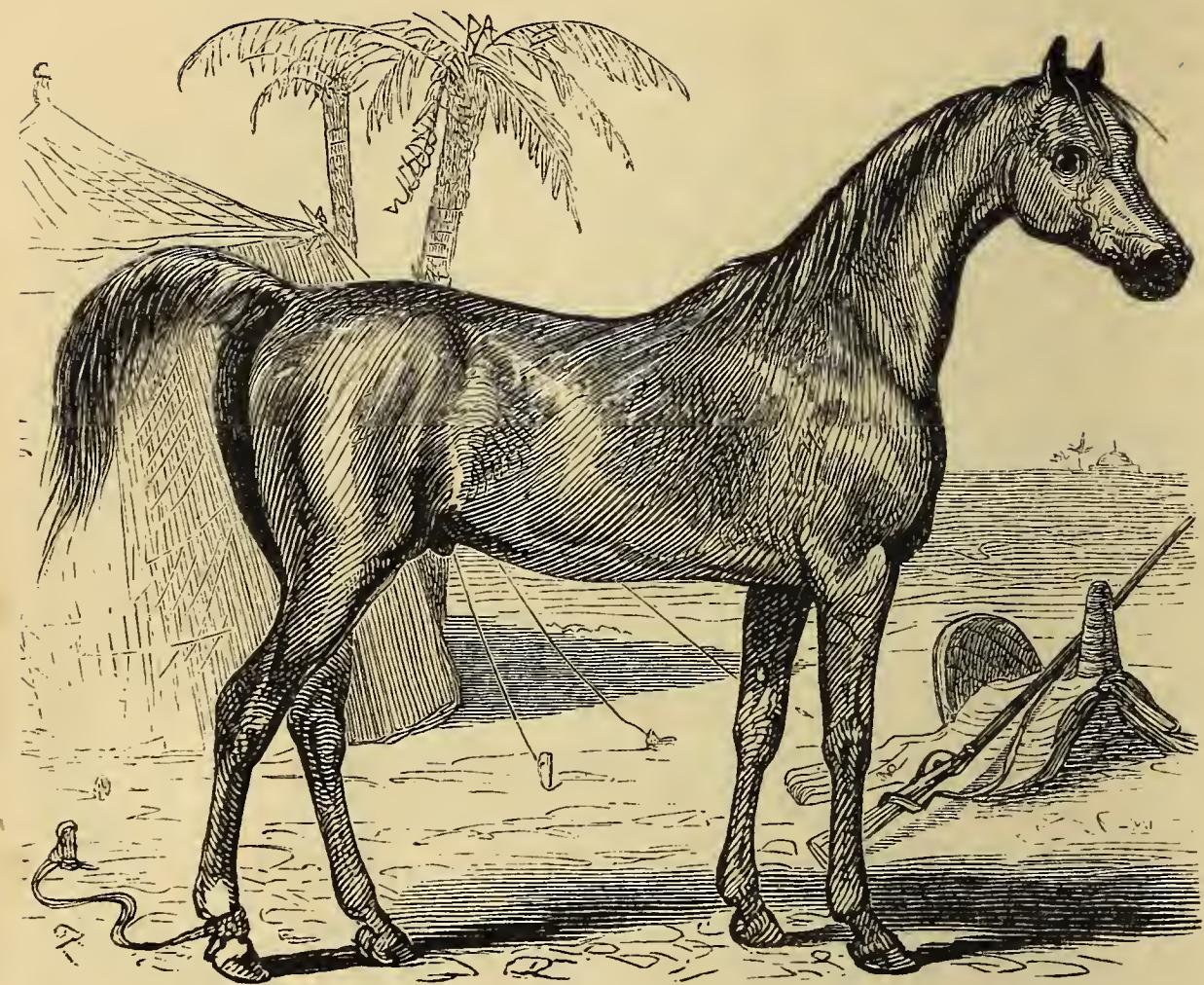
for hours together. Sonnini, when hunting in Guyana, was surrounded by a herd of Peccaries exasperated at the havoc he and his companions had made among them with their guns. "Betaking himself to a tree, he beheld at his ease how they encouraged, by their grunts and rubbing snouts together, those which were wounded by the shots from above, still maintaining their ground, with bristles erect and eyes fiery with rage. They sometimes stood an incessant fusillade of two or three hours before they quitted the battle-field and left their dead to the conquerors."

The food of the Peccary consists of fruits, roots, grain, worms, frogs, or anything bred in moist, marshy places. Their flesh is eaten by the natives; but, to be of use, it must be freed as soon as killed from an odiferous gland in the back of the animal, which else would taint the meat and render it uneatable. The Indians hunt the Peccary by driving the smaller herds to their lairs, and shooting or striking down the sentinel who stands keeping watch at the entrance; when the first is slain a second takes his place, and so on until the whole herd has fallen victims to their instinct of discipline.

The female produces but two young at a time.

The White-lipped Peccary, so called from a band of white hairs crossing the upper jaw and nearly covering the lower, is larger than the above, and more fierce and destructive. It is black in colour, and has a slight bristly mane running along the back. This Peccary is a good swimmer, and frequently takes to the water. As while swimming it is incapable of defending itself, the Indians are in the habit of plunging in among the floating herds, and killing as many as they can without mercy.

THE ARAB HORSE.



THE Arab Horse has been for centuries celebrated for the possession of those qualities which render the Horse of the highest value to man. It is equally noted for its unrivalled grace of form, its swiftness of foot and power of endurance, its docility and its affectionate disposition—qualities which are in great part due to the manner in which it is reared and trained. The Arabs have several breeds of Horses, only one of which, known as the Kochlani, is the genuine Arab steed, the others being used merely for servile purposes. Of this famous breed the mare only is used for riding (the male being never ridden by the Arabs), and when of pure blood she is valued so highly as hardly to be purchaseable at any cost; though the male is often sold without reluctance.

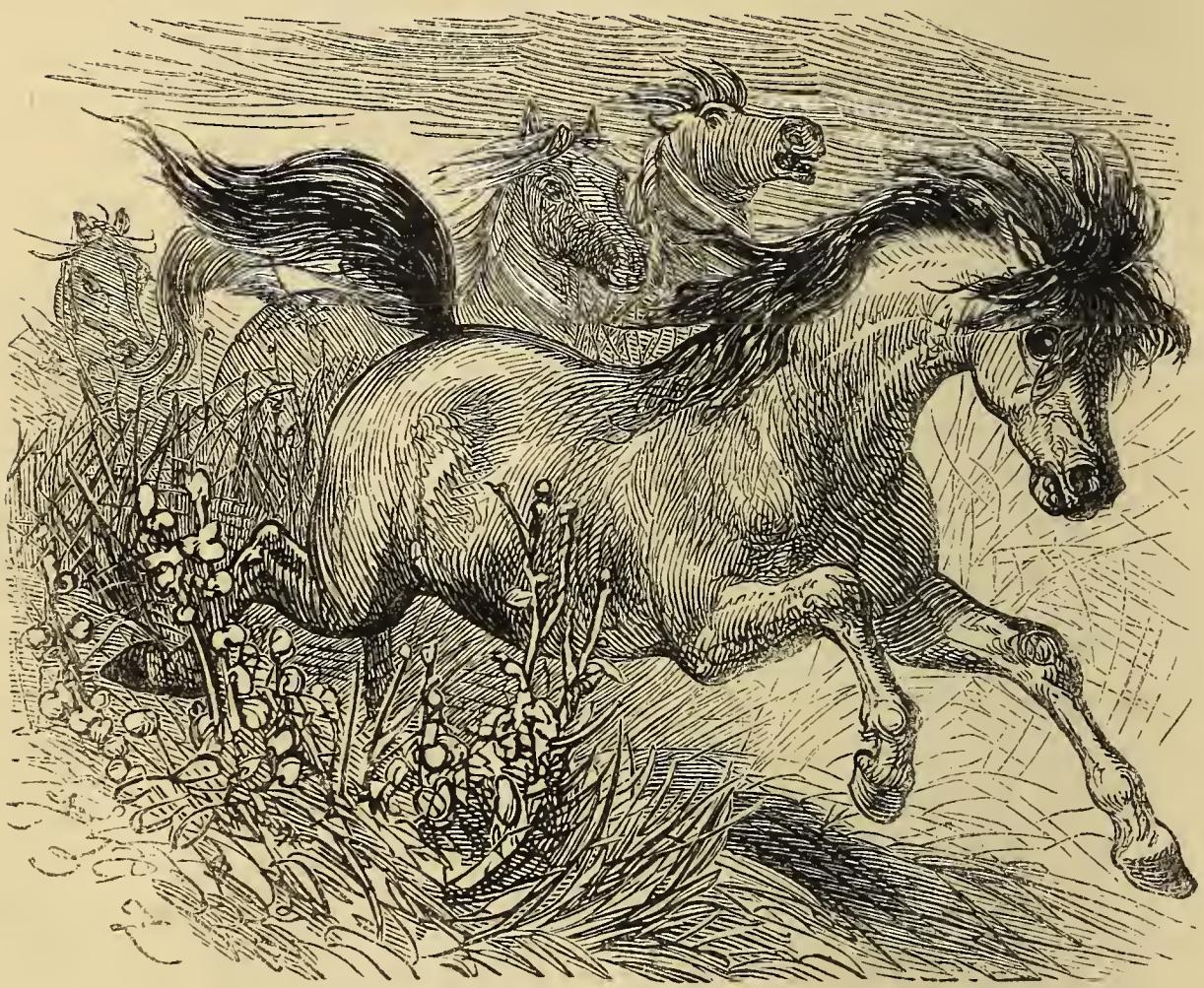
At the birth of a foal from this noble stock, witnesses

are summoned to attest the event ; and the foal is minutely described, and the genealogy written down and carefully preserved—such genealogies often extending over several hundreds of years, and in some cases, it is said, to more than two thousand. The foal is brought up among the family of the owner, is treated with equal tenderness and consideration, and is educated with even more pains than the children. To this kind treatment, there can be no doubt, she mainly owes her excellent temper, remarkable intelligence, and obedience to the voice of her master.

When she has attained her full strength, and not before, she is mounted for the first time, and ridden at full speed for fifty or sixty miles without stopping, and then plunged into deep water, and compelled to swim. If after this severe trial she feeds readily, she is pronounced of pure race, and valued accordingly ; if not, she is rejected as unworthy.

Numerous anecdotes are told of the affection of the Arab for his mare, and of the animal's rare qualities which justify appreciation so great. Burckhardt tells the following story : “ A party of Druses on horseback attacked a party of Bedouins in Hauran, and drove them into their encampment, where they were in turn assailed by a superior force, and all killed, except one man who fled. He was pursued by several of the best-armed Bedouins ; but his mare, although fatigued, continued her speed for several hours, and could not be overtaken. Before his pursuers gave up the chase, they cried out to him, promising quarter and safe conduct, and begging that he would allow them to kiss the forehead of his excellent mare. Upon his refusal they desisted from pursuing, and blessing the generous creature, they exclaimed, addressing her owner, ‘ Go, and wash the feet of your mare, and drink up the water.’ This expression is used by the Bedouins to show their great love for such mares, and their sense of the services they have rendered.”

THE MUSTANG ; or, PRAIRIE HORSE.



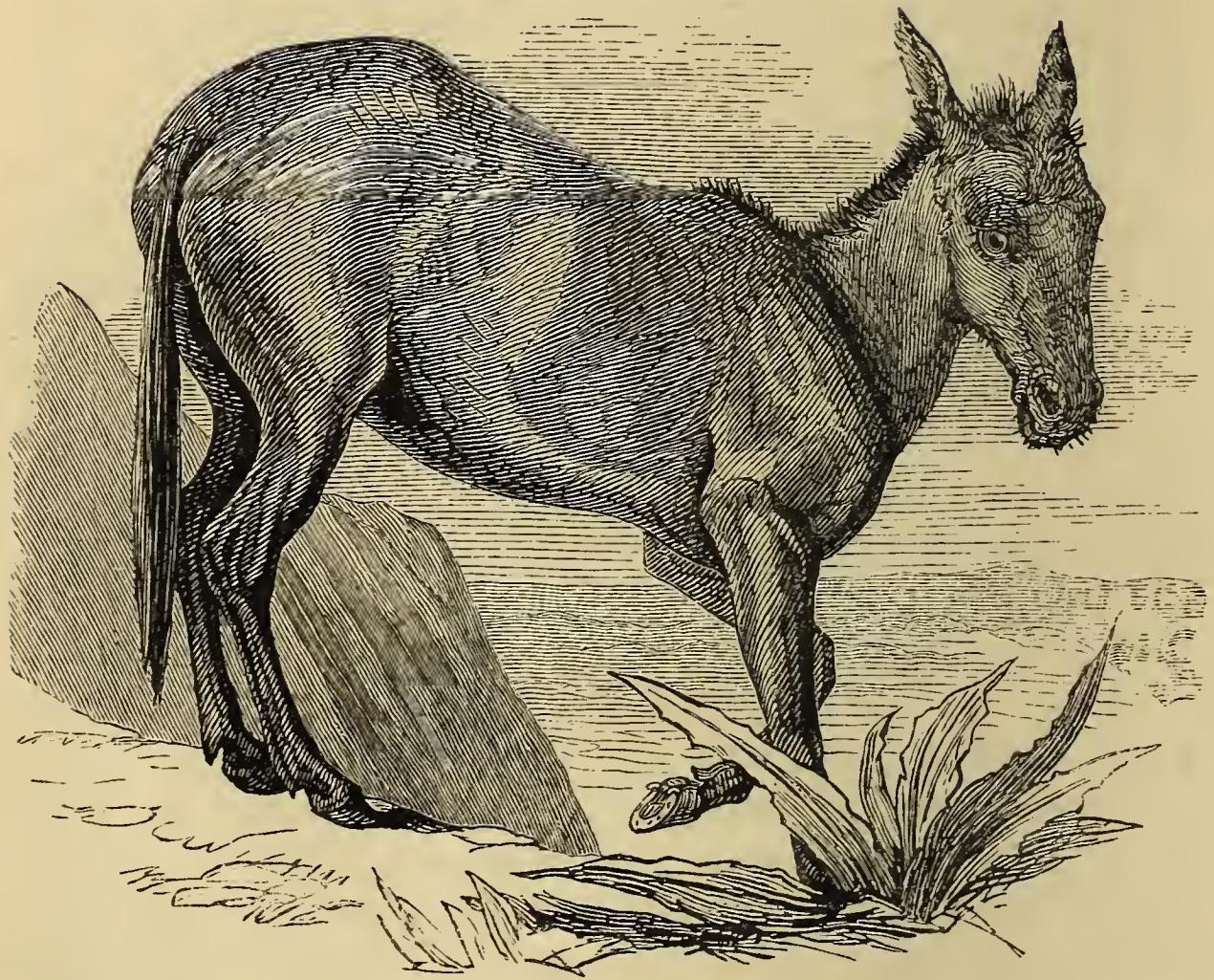
THE Mustang, or Wild Horse of the American prairies, is the descendant of the European Horse introduced into America after the conquest of that country by the Spaniards. Mustangs are muscular, spirited, and finely formed, and are capable of great exertions long continued; on this account they are much in request as saddle-horses by travellers who journey across the interminable plains of the Western continent. Large herds of these wild horses rove the prairies under the guidance of a leader selected from their number, who directs their wanderings. United for purposes of safety and defence, these herds have no fear of the ravenous beasts of prey which infest the plains, none of whom will venture to attack them. Their only enemy is man, who selects the choicest individuals from the vast herds and takes them captive at his will, though often not without considerable peril.

as well as labour. The capture is usually effected by means of the lasso, which is a leather rope prepared with a sliding noose at one end. The hunter, mounted on a fleet Mustang trained for the purpose, on coming up with the herd, dashes in amongst them, and choosing his prize, launches the lasso in the air so dexterously as to encircle his neck with the noose. His own trained steed immediately swerves from his route in such a way as to tighten the rope, by which the captive is either thrown to the ground or brought to a stand-still for want of breath, owing to the pressure of the tight coil round his neck. The hunter now dismounts and approaches his prisoner, tightening the coil when the latter tries to escape—and, watching his opportunity, seizes the trembling creature by the muzzle and blows strongly into its nostrils. This rather odd procedure has the effect of quieting the restive animal, who afterwards gives his new owner but little trouble.

According to the Rev. J. G. Wood, another method of catching the Mustang is what is called "creasing." By this method the horse which the hunter has pitched upon is fired at from a rifle, the bullet taking effect so as merely to graze the skull just behind the ear. The blow of the bullet stuns the horse, which is effectually secured before it has time to recover consciousness.

The Guachos, who inhabit the Pampas of South America, and who are some of the most fearless horsemen in the world, pursue a more cruel plan in taming the Mustang. Having caught their victim in the coil of the lasso, they throw him prostrate upon the ground. A man then seats himself upon the head of the captive, while others fasten a saddle to his back and force a bit into his mouth. A rider, armed with whip and spur, then stands astride over the prostrate prisoner, who is now allowed to rise; but he rises with a rider on his back whom all his efforts are vain to shake off: in spite of all his rearing, plunging, and kicking, he has to submit to his fate and succumb to the will of his conqueror.

THE MULE.



THE Mule is the offspring of the male ass and the mare, and partakes of the qualities of both parents, though it has greater powers of endurance than either of them. It is also distinguished by remarkable intelligence, by affection for its fellows, as well as by an obstinacy which at times it is almost impossible to overcome. The powers of endurance, and the sure-footedness of Mules, render them specially valuable in mountainous districts, and in countries where there are no well-made roads. They will travel all day long, at a walking pace, for weeks together, in long troops or companies, each Mule with a burden of three or four hundred pounds' weight on its back ; and thus laden they will toil through the most rugged passes, and traverse narrow ledges of rock where no horse could

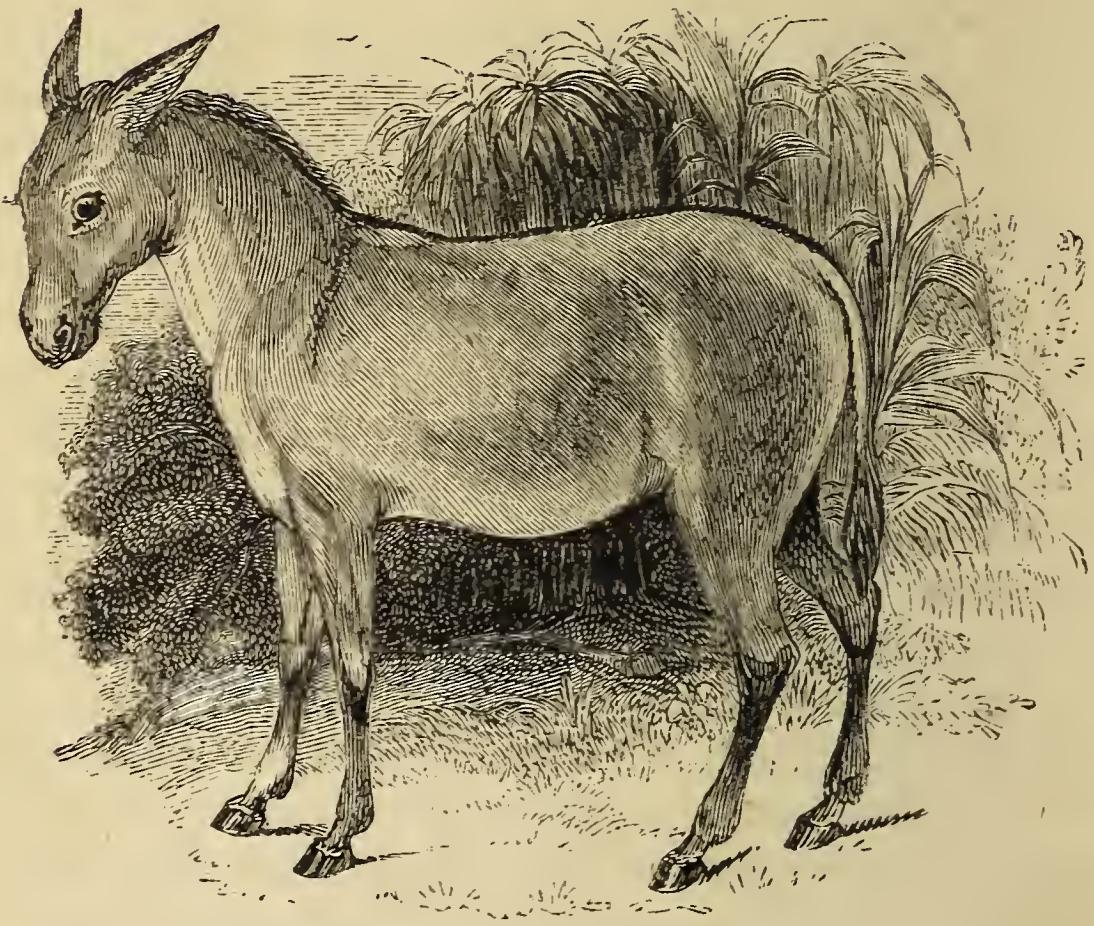
safely travel. On these accounts they are most valued in the southern countries of Europe, and particularly in Spain, where they are bred in great numbers, and where for hundreds of years they have been used as the principal means of inland transport, both for goods and passengers. The mule troops are under the charge of a muleteer, to whom the animals are generally much attached, and whom they will obey with the utmost readiness, when not provoked : he, on the other hand, takes care not to provoke them, provides regularly for their wants, takes pride in their appearance, decorates their heads with flowers on approaching a town, and will suffer no one to ill-treat them.

The choicest Mules are those which have been bred and trained to the saddle for the use of the Spanish gentry. They are about the size of an English cob horse ; some of them are extremely beautiful creatures, with slender delicate limbs, and small elegant feet, and are preferred to the finest horses, which they are said to excel in every quality but that of speed, while they more than make up by endurance for that one defect.

Wherever the Spaniards have extended their sway, they have introduced the use of the Mule, and, in consequence, these animals are as common in Mexico and Spanish South America as they are in any part of Europe. Mr. Darwin, in describing his passage over the Cordilleras, gives the following account of the social habits of the Mule : "My companions were Mariano Gonzales, and an arriero with his ten Mules and a madrina. The madrina (a godmother) is a most important personage. She is an old steady mare, with a little bell round her neck, and wherever she goes, the Mules, like good children, follow her. If several large troops are turned into one field to graze, in the morning the muleteer has only to lead the madrinas a little apart and tinkle their bells ; and, although there may be two or three hundred Mules together, each immediately knows its own bell, and separates itself from the rest. The

affection of these animals for their madrinas saves infinite trouble. It is nearly impossible to lose an old Mule ; for, if detained for several hours by force, she will, by the power of smell, like a dog, track out her companions, or rather the madrina ; for, according to the muleteer, she is the chief object of affection."

Mules are not commonly bred in this country, where there is no special demand for their peculiar qualities. Occasionally, however, one is offered for sale at cattle-fairs, or seen in harness in the streets of London, ambling along at a steady pace with some light vehicle.



THE WILD ASS.

THE Wild Ass is a much more graceful and symmetrical animal than the common ass, its legs being longer and more slender, giving it a loftier stature.

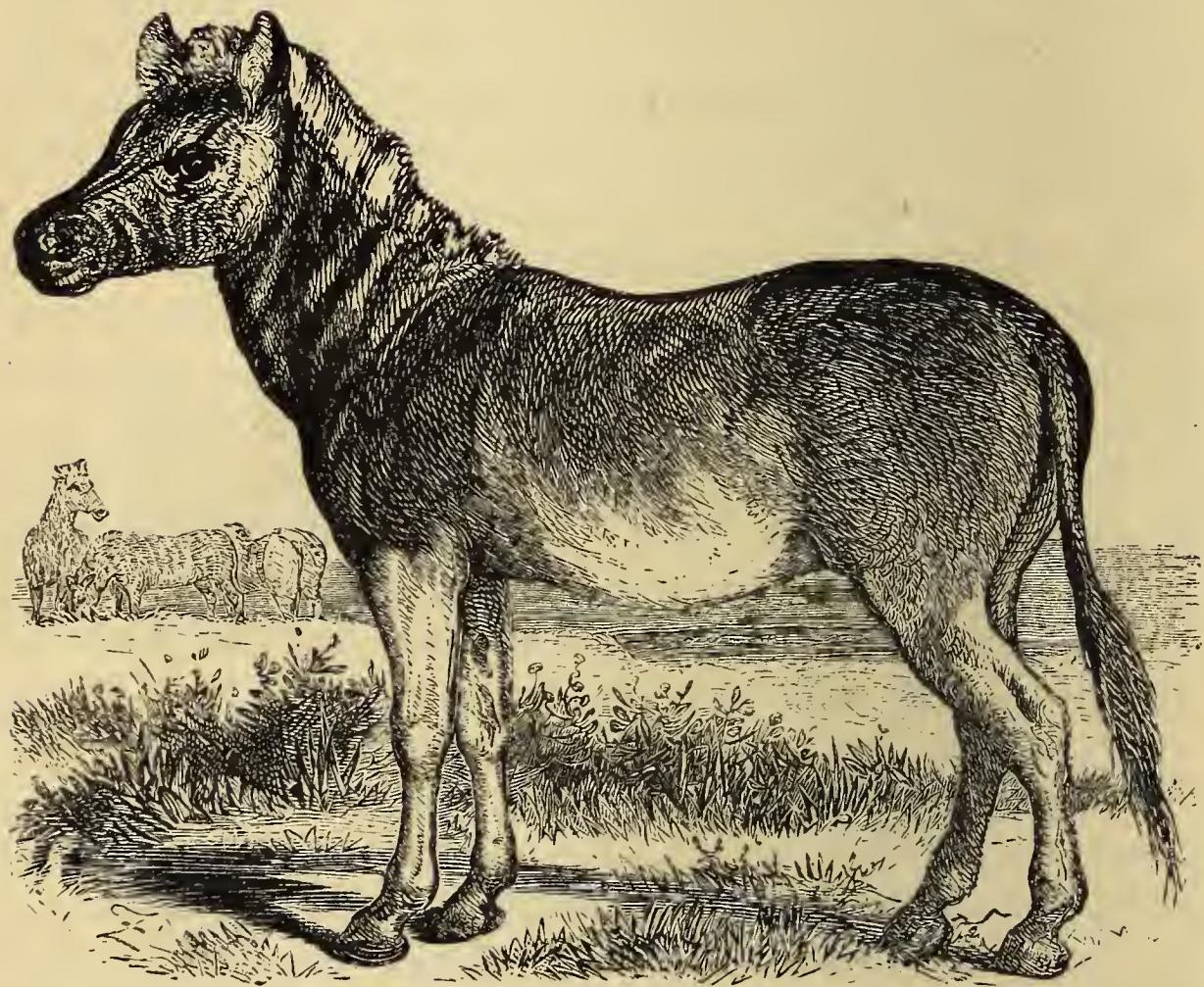
Its colour is a uniform silvery grey, with a black-brown stripe extending along the back from the mane to the tail, crossed, as in the domestic ass, by a transverse band on the shoulder. The mane is of a woolly texture, and is composed of short hair standing erect. This animal, called the Koulan by the Persians, and, doubtless, the Wild Ass of Scripture, inhabits the central parts of Asia to the northern limits of India. The Koulans are migratory in their habits, avoiding the tropical heats during the summer, and assembling in vast troops in autumn, and proceeding, under the conduct of a leader, towards the south—returning again northward in the following spring.

The Tartars and Persians prize the flesh of the Koulan, and hunt it in preference to any other game. It is so fleet of foot, and has such powers of endurance, that no single horse would overtake it in the chase. The hunters, therefore, place relays of horses and dogs along the track the animals are known to pursue, and, mounting their relays and starting fresh dogs, succeed in overtaking their exhausted quarry. The flesh of the Wild Ass has been considered a luxury from a very remote period; and we know that the Romans held it in high estimation. They obtained their Wild Asses from Africa; but no modern traveller has met with the animal on that continent, and it appears to be now confined to Asia, and it has even abandoned Syria and Palestine, where it was formerly to be found.

THE QUAGGA.

THE Quagga is one of the South African wild asses, the whole of which are remarkable for their extraordinary fleetness and sureness of foot: when hunted,

as they frequently are, by the natives and settlers, they cannot be overtaken in fair pursuit, but must be intercepted in their flight, or caught by some stratagem, if caught at all. The Quagga is a handsome, well-formed animal, approaching to the horse in general outline, and indeed it has been placed by some writers among the true horses. It is marked on the fore and hind parts of the body with the characteristic stripes of the zebra,

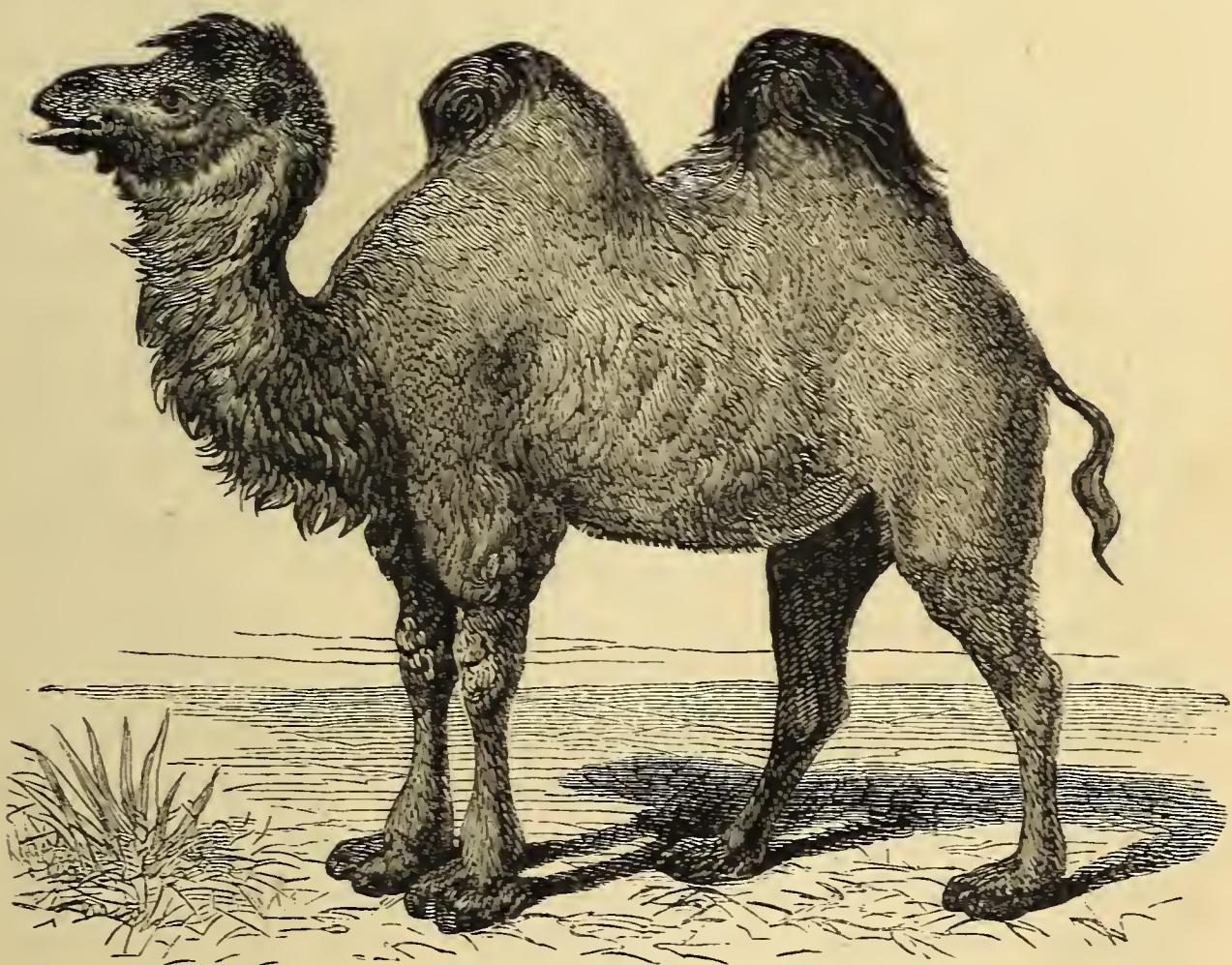


the lower parts, the legs, and the tail being of a dull whitish-grey. The stripes are neither so deep in colour nor so well defined as those on the zebra. The Quaggas associate together in large herds, and they are much hunted by the natives of the country, who prize their flesh for food and their skins for the price they will fetch in the market.

Another of the South African wild asses is the Dauw, called by the Dutch colonists the Boute-quagga, and by the Matabele and Bechuana tribes the Peet-sey. This

species is found in great numbers south of the Orange River, where they confine themselves only to the plains. The Dauw is also partially covered with the zebra-like stripes, its general colour being a pale brown. It can be, to some extent, tamed and domesticated, but is found to be of too obstinate a disposition to be of much service to its owner.

THE BACTRIAN CAMEL.



THE Bactrian Camels are found in considerable numbers in the central parts of Asia, north of the Taurus and the Himalayan mountains. Occasionally they are met with in Arabia, and other countries, where they have been domesticated; but they are not so much valued as the common or Arabian Camel, because they

are not so well adapted for long journeys over desert regions, where little or no water can be obtained. The Arabian camel, when setting forth on a long journey, will drink water enough to satisfy its thirst for five or six days ; but the Bactrian Camel will require to drink again at the end of three or four days, and should there be no water for it, will be unable to proceed.

The Bactrian Camel is distinguished from the Arabian by having two humps on its back instead of one, by its somewhat larger stature, by its stouter limbs, and by the abundance of its hair, which, beneath the throat, is long and shaggy. Its colour is generally a dull dark brown, sometimes approaching to a dirty white, and at others almost deepening into black. These animals vary much in value, according to the pains that are taken in their breed and nurture, and according also to the climate in which they are reared—some of them being much larger, fleeter, and more powerful than others. In Persia, the Bactrian Camel is pressed into the military service : a number of them properly trained, and each one mounted by a soldier, who sits in a saddle constructed to carry one or two swivel-guns, form a corps of camel artillery—a force which is accounted formidable in the armies of the East.

The habits and qualities of the Bactrian Camel differ very little from those of its Arabian relative. It carries burdens as heavy ; it lives on the same kinds of food ; it can close its nostrils against the drifting sands of the desert, as the Arabian Camel does when the sand-storms prevail ; and it has feet just as broad and springy to prevent its sinking in the yielding soil. That it cannot remain so long without water as the Arabian Camel does, seems to show that it was not designed by the Creator to live on so thirsty a soil.

THE ALPACA LLAMA.



THE Alpaca Llama is one of the four acknowledged species of the genus *Llama*. The Llamas represent in the New World the camels of the Old World. They are, however, of much smaller dimensions than camels, rarely measuring more than six feet in length, or much more than four feet in height. The Spaniards, when they first saw these animals in Peru, called them Peruvian sheep, doubtless from the expression of their countenance, which strikingly resembles that of the sheep, and from their fleecy burdens of woolly hair. In their wild state the Llamas keep together in herds of one hundred to two hundred each, and feed on a certain kind of rushy grass or reed which grows on the sides of the mountains, and not requiring any drink so long as the herbage is plentiful ; they keep a very careful look-out, and flee with rapidity from the approach of an enemy.

Great numbers of Llamas are bred and maintained in a domesticated state, and are used by their owners as beasts of burden, and sometimes as steeds to ride on ; they can carry from a hundred to a hundred and fifty pounds' weight, and will travel with it fifteen miles a day.

The Alpaca Llama, represented in the engraving, has of late years come into special notice in this country from the value of its wool, and the manifold uses to which that has been applied ; it is manufactured into coverings for umbrellas and parasols, into over-coats, and stuffs for ladies' dresses, into swimming-belts and life-preservers, and countless other things, the production of which supplies thousands of our labouring population with employment from one year's end to another.

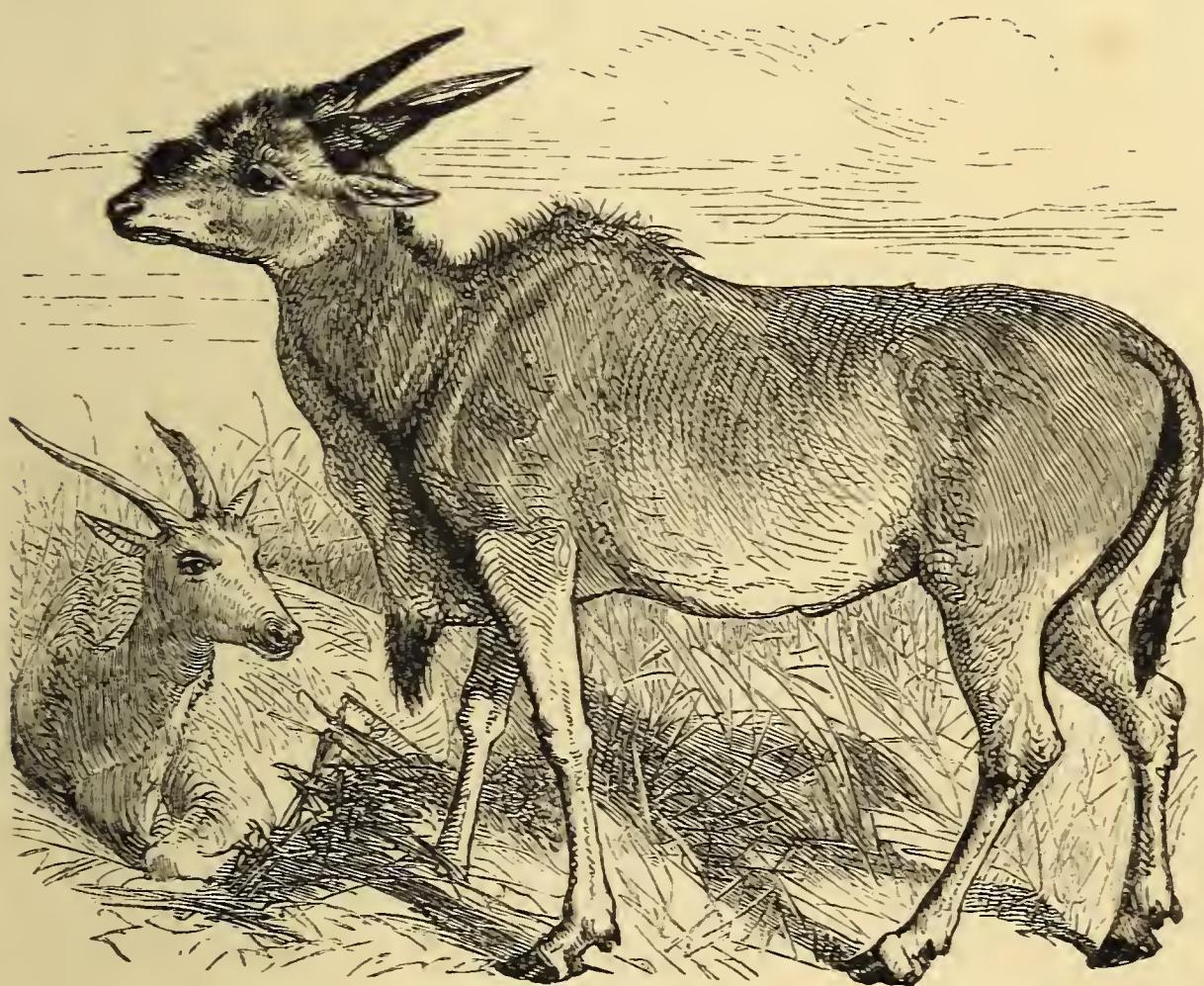
The other species of Llamas are, the Vicugna, found in the higher regions of Batavia and Northern Chili, and valuable for its soft silken fur ; the Guanaco, which is spread over the whole of the temperate region of Patagonia ; and the Yamma, the Llama of Peru above referred to.

THE ELAND.

THE Eland is by far the largest of all the antelopes, equalling a good horse in size, as it measures over eight feet in length, and is five feet or more in height at the shoulders. The horns of the male are eighteen inches in length, and are spiral or twisted at the base ; those of the female are longer, not so stout, and less visibly twisted. The tail averages two feet in length, terminating in a tuft of long black hair.

The flesh of the Eland is much prized ; it is described by Dr. Livingstone as being superior to beef, and it possesses the recommendation of being perfectly tender immediately after the animal is slain. From the excellence

of its meat this fine animal is much hunted by the farmers and settlers of South Africa ; and so great has been the destruction of them from this cause, that they have long since ceased to frequent the settled districts, and have to be sought for beyond such limits. The chase of the Eland is one which presents no difficulty, and comparatively but little labour. The animals are gregarious, and so unsuspecting that a hunter can



ride into the middle of a herd and select, if he will, the fattest or best-conditioned. The beast being huge and heavy, the object of the huntsmen is to turn their game in the direction of their dwelling or of their temporary camp, so that when it is slain they may be spared the trouble of transporting the flesh to any great distance. Parts of the carcase are usually dried and cured, and the large muscles of the thighs, known as "thigh tongues," are held in great estimation.

The food of the Eland is vegetable, chiefly grass and

herbage, of which it is known to devour an enormous quantity ; it has the faculty of being able to subsist without drinking for months together, and maintains its good condition throughout the longest seasons of drought.

There is a variety of this animal sometimes, though but rarely, met with in South Africa, known as the Striped Eland. Colonel Faddy, of the Royal Artillery, shot several of them a few years ago, and presented their skins to the Museum of the Royal Artillery at Woolwich.

THE WAPITI.

THE Wapiti is one of the largest and most stately of the deer tribe, a full-grown animal standing nearly five feet high at the shoulders, and measuring over seven and a half feet from the nose to the base of the tail. The body is mostly of a bright yellowish-brown colour, with a circle of deep brown surrounding the eyes. A native of North America, the Wapiti lives in herds, varying in numbers from less than a score to several hundreds ; the herds are under the conduct of a leader, to whom they show a marked obedience, and who obtains his dignified position by fighting desperately for it and overcoming all competitors.

The food of the Wapitis consists of grass, herbage, lichens, wild vines, and the branches of certain trees ; and in winter they are seen raking the snow from the ground with their fore-feet in order to lay bare the vegetation beneath. The horns of this deer are stately and widely branched ; they are never found to be precisely alike in any two individuals, and are of considerable weight—a pair that was shed by one of the Wapitis in the Zoological Gardens weighing over twenty-six pounds. From their great height and width, they might be supposed to impede their owner in his course through a tangled wood ; but when running the Wapiti

throws back its head, so that the horns rest upon the shoulder, all their points turned in the opposite direction of its progress, so that it clears the thickest wood with ease in its rapid flight. The Wapiti is a good swimmer, and will not hesitate to plunge into the most rapid stream ; like many other animals, it is fond of cooling itself in the water during the hot days of summer. It does not bell, like the English deer, but when excited or alarmed sends forth a loud whistling sound that may be heard at the distance of a mile.



The flesh of the Wapiti is said to be hard, like dry close-grained beef ; it has been praised as excellent food by some writers, and has been decried by others. The skin has been used for making mocassins, thongs, straps, &c. and when properly tanned makes excellent leather. The Indians place a value on the Wapiti's teeth, which they employ in the decoration of their garments.

The Wapiti will breed and thrive well in this country, but the breeding of them is not much encouraged, the quality of the venison being considered much inferior to that of our native deer.

THE MUNTJAK.



THE Muntjak, or Kijang (sometimes called the Ribbed-faced Deer), is a small and elegant animal, measuring little more than two feet in height at the shoulders. Its general colour is a reddish-brown on the upper parts of the body, and white on the under parts and along the fronts of the thighs. The head is rather long and pointed ; the eyes are large, as are also the ears ; two rough folds or ridges of skin, widely parted above the level of the eyes, and running down the prominent part of the forehead to a point, mark the face with the letter V. It is this peculiar mark which has obtained for the animal the designation “ribbed-faced.” The adult male has horns about the

same length as the head, and converging towards each other at the tips ; it has also large canine teeth in the upper jaw ; the female has no horns, nor such canine teeth.

The habits of the Muntjak are peculiar. It shows a remarkable attachment for certain localities in the districts where it inhabits, and will never willingly abandon them. The places they prefer are lands at a moderate elevation, which are either near to some mountainous craggy region, or on the borders of extensive forests, to either of which retreats they can have recourse in case of alarm. Such places are the resorts of the Muntjaks of many generations. In Java, the home of this animal, such spots are not uncommon ; and as they abound in the long grass, and the various shrubs and plants of the mallow tribe, which are the favourite food of these small deer, their preference for such localities is not to be wondered at.

The Muntjak is more restive in confinement than most other deer, and cannot be so readily domesticated. It has, however, been kept by Europeans along with stags in their enclosures ; but it is said to require a considerable range of territory in order to thrive well, as it is fastidious and particular in its choice of food. Its venison is excellent, and is in high repute. The natives of Java eat only the males, the flesh of which they regard as a luxury, while rejecting that of the females.

THE KANCHIL.

THE Kanchil is one of the family of the Musk Deer, which are distinguished in appearance from the other deer, chiefly by their smaller size, by their having no horns, and by the extraordinary projection of the canine teeth in the upper jaw—these teeth overhanging the lower jaw and curving downwards in the form of tusks.

The Musk Deer inhabit the northern parts of India, and are found spread over a large range of country ; in all cases they resort to the mountainous districts. They are hunted for the sake of their musk, which is valuable as a perfume.

The Kanchil is the smallest of the whole of this group, and is called from its diminutive size, which hardly exceeds that of a hare, the Pigmy Musk. It



does not, however, supply any of the valuable perfume, as it possesses no musk-pouch. The fur of the Kanchil is soft and lies close to the body, and is of a light fawn-colour, varied by patches of white on the chest, and a broad black stripe running along the back of the neck. Unlike the true Musk Deer, it avoids the cold and lofty mountain lands, and prefers the warmth and shelter of the wooded districts. It is a native of Java and the neighbouring islands, where it has earned for itself a character for craft, strategy, and cunning, equal

to that of the English fox, so that, "as cunning as a Kanchil" has become a proverbial saying among the people. A common mode of catching it is by means of snares made with a noose. It is the habit, or instinct, of the animal, when caught in one of these snares, to stretch itself out stiff and motionless, as though it were dead ; if the hunter is deceived by this trick, and takes the supposed carcase out of the trap, the Kanchil will watch its opportunity, start to its feet, and be off with the speed of an arrow. Sometimes, when hunted by dogs, it will resort to another expedient no less cunning : in the midst of the chase through the forest it will take a sudden leap upwards, and fastening itself to the branch of a tree by means of its curved canine teeth, will remain there suspended until the dogs have passed onwards.

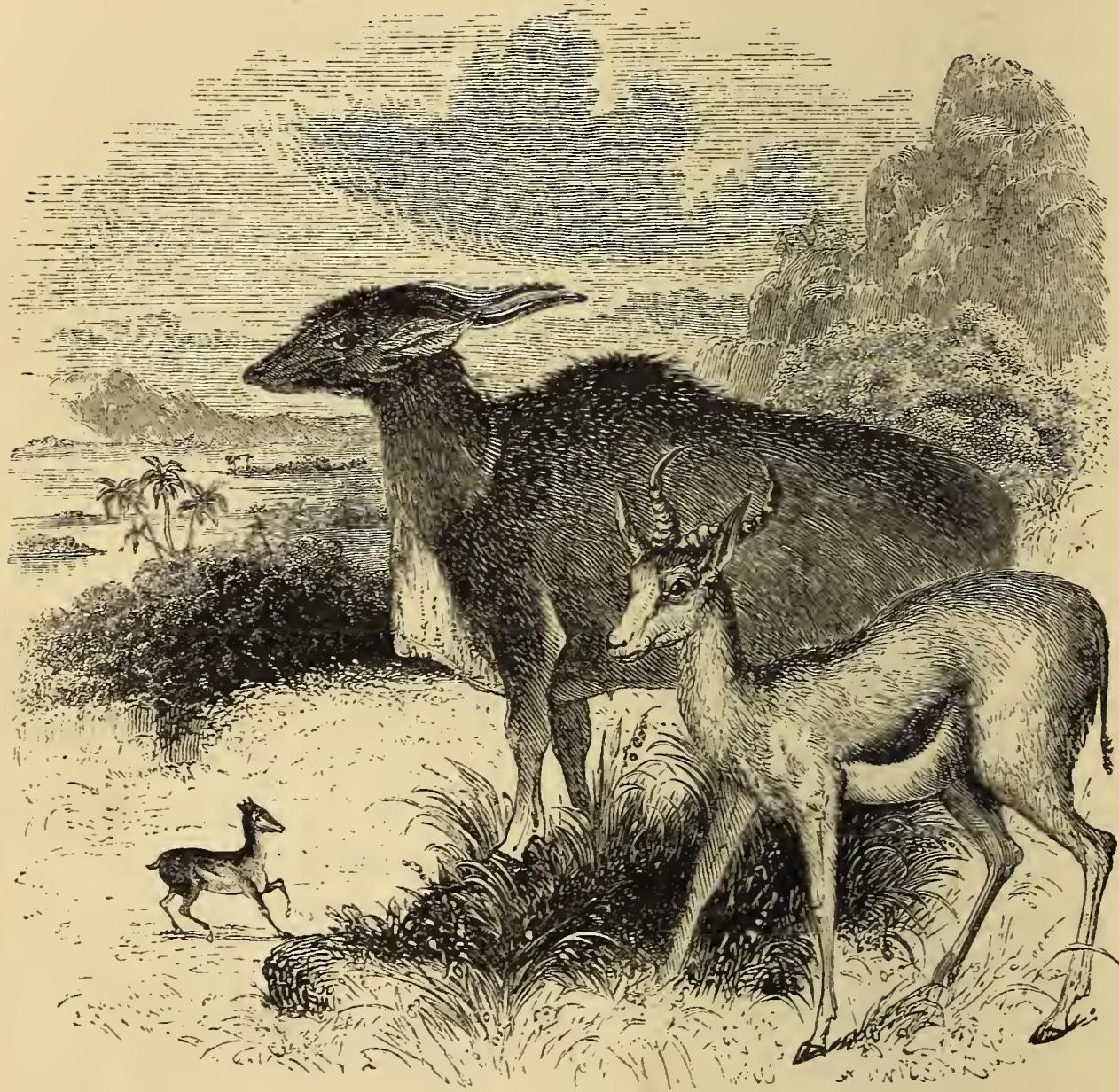
The food of the Kanchil is entirely vegetable, consisting principally of berries of various kinds.

THE SPRING-BOK.

THE Spring-bok, one of the group of antelopes, derives its name from its habit of leaping high in the air whenever it is alarmed. It is remarkably agile and swift of foot, though it is rather clumsily shaped, the body appearing much too portly for the slender limbs which support it, and the croup standing higher than the shoulders. The fur is of a warm fawn-colour upon the upper surface of the body, and a pure white underneath, while a broad stripe of deep tawny hue separates the other two colours. A stripe of white colour also runs along the croup. The horns are large, and when full grown turn inwards at the points, or assume the lyrate form, and are marked with eighteen or twenty narrow rings.

The Spring-bok is hunted for the sake of its flesh, which is reckoned good food, and also for its skin, which

is turned to many useful purposes. It is an extremely timid animal, takes alarm at the slightest disturbance, and will not cross the track of man unless when compelled to do so—in which case it is seen to leap over the ground, sometimes rising as much as ten or a dozen feet in the air.



These animals are found in prodigious numbers in the vast plains of Southern Africa, where, under the conduct of chosen chiefs, they migrate from one district to another, laying waste the country through which they pass, and clearing it of grass and herbage. Captain Cumming states that, on rising one morning, he saw the ground to the northward of his camp "actually covered with a dense living mass of Spring-boks march-

ing slowly and steadily along, extending from an opening in a long range of hills on the west, through which they continued pouring like the flood of some great river." This living stream was about half a mile in width, and the captain stood for nearly two hours lost in wonder at the scene ; during which time "their vast legions continued streaming through the neck in the hills in one unbroken compact phalanx." It has been supposed that want of water is the cause of these multitudinous pilgrimages ; but Dr. Livingstone attributes them to some other cause—the Spring-bok not being a thirsty animal. During their long marches the herds suffer much from the ravages of various beasts of prey, who invariably follow upon their skirts ; and numbers of them fall daily victims to the leopards, lions, jackals, and hyænas which are ever ready to dash in among them ; while they are also shot down by hundreds by the natives and colonists who intercept them on their route. If other animals should become mixed up with the migrating herd, they are carried along with them, and even the lion himself has been thus compelled to march amidst the dense throng.

A curious provision has been noticed by which these enormous herds are all fed. As those in the front devour all the grass, there would be nothing left for those who follow, were it not that when the leaders have fed to the full they become satiated and heavy, and, relaxing in their pace, allow others to pass them ; by this means each portion of the herd comes in its turn upon the fresh pastures, and all fare alike.

The favourite food of the Spring-bok is the short, sweet, tender grass which springs up in the track of fire, after the old grass has been burned off the soil. The Kafirs, aware of this predilection, burn away the long grass in certain favourable places in order to lure the Spring-boks to the spot ; and there, when the fresh grass appears, they lie in wait for the unsuspecting animals.

THE ORYX.



THIS is the species of antelope sometimes referred to as the White Antelope, the Milk-white Antelope, and the Algazel, and which is known among the Arabs by the names of Abu-harb, Jachmur, and Yazmur. It is, perhaps, the most notable of all the antelope genus, being the animal which, according to some writers, gave rise to the fabulous unicorn of the ancients, though other writers claim that distinction for the rhinoceros. Its horns are of great length, but of small bulk, and have but a single curve in their whole course, which describes a portion of a very large circle; they are ringed for about half their length, and are sharp at their points. The ears are long and pointed; and the tail, which falls below the hocks, terminates in a tuft

of hair of mixed black and grey. The hair of the whole body is short and lies close to the skin, save on the ridge of the back, where it is longer and turned towards the head, forming a kind of reversed mane. The colour of the animal is a milk-white, with the exception of the neck and throat, which are of a rusty brown, and some brown marks on the face, including a central stripe of brown from the base of the horns to the muzzle.

The Oryx is found in Sennaar, Nubia, Senegal, and other parts of Northern Africa, where it is met with in herds of considerable numbers. Their food is the leaves and tender branches of a species of acacia. They are hunted by the natives, and defend themselves resolutely when brought to bay, sometimes inflicting terrible wounds with their long pointed horns. The height of the animal is about three feet six inches at the shoulders.

“This species of antelope is frequently represented on the monuments of Egypt and Nubia, and particularly in the inner chamber of the great pyramid of Memphis, where a whole group of these animals is represented, some being driven or pushed forwards, and others led by the horns, or by a cord about the neck, apparently by way of tribute from some subject or conquered nation. With one exception these representations are invariably in profile, so that only one horn is seen.”*

Another species of Oryx is the Oryx Gazella (the Gems Boc), which is a stout heavy animal about the size of the domestic ass, having horns perfectly straight. It inhabits the parched and barren regions of Southern Africa, where it can live without water, supplying the moisture it needs by feeding on succulent plants.

There is also a third species of Oryx, called the Beisa, a native of Abyssinia.

* Knight's Cyclopædia of Natural History.

THE CASHMERE GOAT.



THIS is one of the varieties of the Goat tribe, which varieties amount to at least forty in number, scattered through different countries and climates. It is a native of Thibet and the neighbouring regions, and differs in appearance from the Common Goat chiefly in the quantity of its hair, which covers the legs as well as the body of the animal; the hair is also very fine in quality, which renders it available for the manufacture of the famous Cashmere shawls, so much prized in the fashionable world. The hair or fur of this Goat is of two kinds—a soft, silky undergrowth of a greyish hue next to the skin, and an outer covering of longer hairs which serves as a protection to the inner fur. It is the soft undercoat which is used in the manufacture of the

Cashmere shawls, of which about thirty thousand are made annually, employing sixteen thousand looms, and giving occupation to multitudes of both sexes. The wool, which costs in Cashmere nearly a shilling a pound, is spun by women and coloured afterwards ; it is said to be mixed, however, with the wool of certain Indian goats—those of Thibet and Cashmere not supplying sufficient for the demand. The fleeces of ten goats at least are required to furnish the material for a shawl a yard and a half square. The completion of a shawl of the best description is a work of time and patience, some of them occupying four people for a whole year—the four working together in front of the stretching-frame. The cost of shawls thus made is necessarily very great, and it is further enhanced by heavy taxes levied on the wool in all stages of its manufacture.

Attempts have been made to domesticate the Cashmere Goat in this country. Some years ago Mr. Towers imported forty of them ; and it is said that the shawls which were made from their fleeces were excellent. One of these shawls was presented to Queen Adelaide. Cashmere Goats have also been kept in the gardens of the Zoological Society, and at the farm at Kingston Hill. But although the wool produced by the imported animals appeared to be equally good and fit for manufacture, the endeavour to acclimatize the Goats, whatever may be the cause, has not been attended hitherto with any very encouraging success.

THE ARGALI.

THE Argali, or Wild Sheep, is one of the largest of the race of sheep, approaching in size to that of an average ox, and standing four feet high at the shoulders. It is further remarkable for its huge

massive horns, which at their juncture with the head are nineteen inches in circumference, and are nearly four feet in length, measuring along the curve—which is first upwards, then downwards below the level of the jaws, then upwards again to the point: they are covered with a series of close-set ridges extending the whole length nearly to the tip. In the furious combats in which the males often engage with each other, these



horns are frequently broken off, in which case some fox, or other small quadruped, is seen to take possession of them and appropriate them for dwellings, or snug retreats from the winter's cold.

The Argali inhabits the high grounds and mountain tracts of Southern Siberia, where it is found living in small flocks which seldom descend to the lower grounds; if, when they do visit the valleys to feed, they are alarmed by the approach of man, they make off with astonishing speed to their rocky retreats. In winter the Argalis are overtaken by deep snows, which they

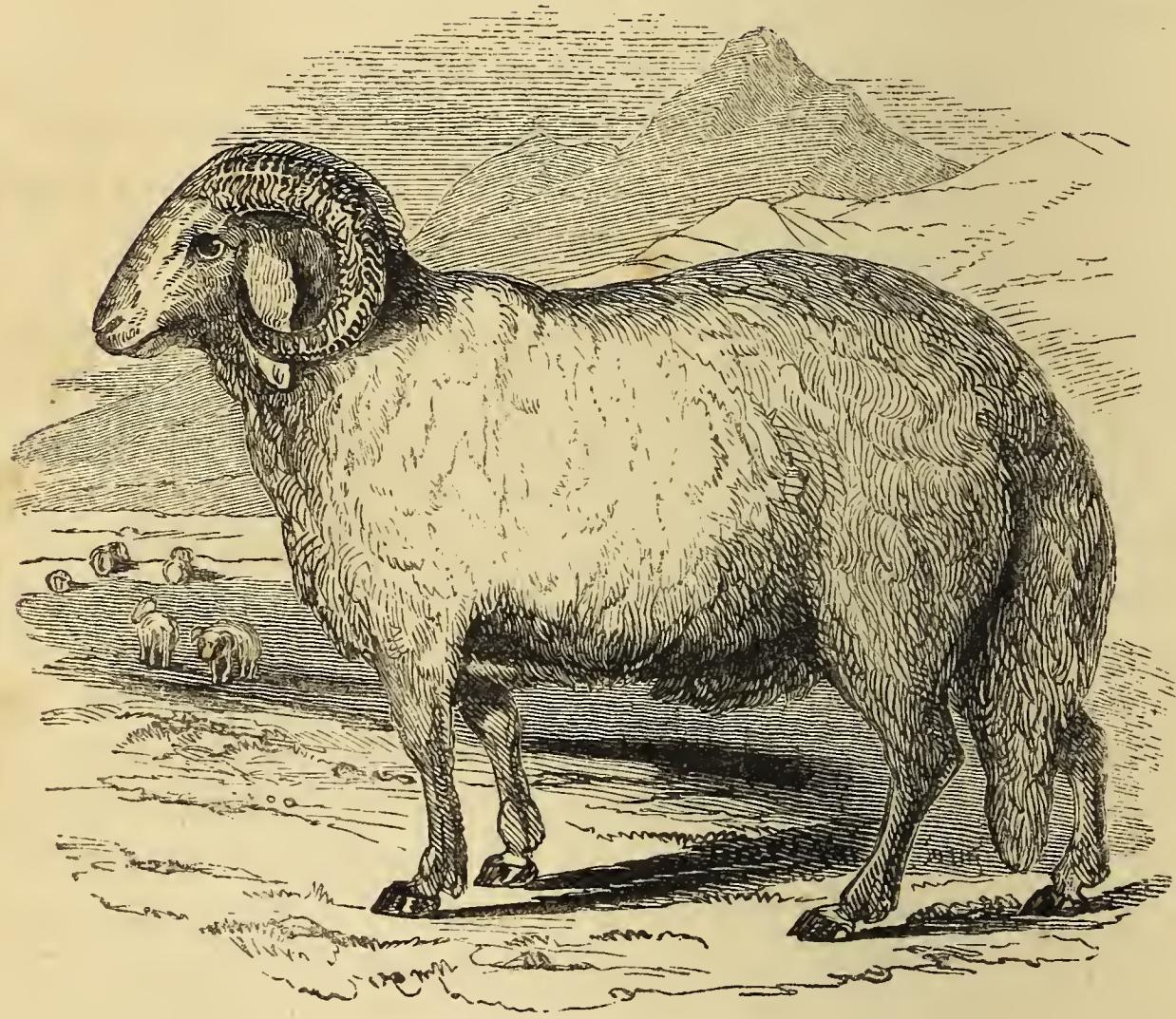
convert into a snug shelter by allowing the snow to drift over them, and, by a gentle movement of the body backwards and forwards, forming a chamber beneath it in which the occupant is warmed by the temperature of his own body. A breathing-hole is left open for the supply of air ; and thus covered up, they lie content until the stormy season is over. At this period, however, they are in the greatest peril from the hunters, who track them with dogs, and often spear them as they lie—the odour of their breath through the breathing-holes betraying them to the sharp-scented dogs.

THE SYRIAN FAT-TAILED SHEEP:

THERE are several kinds of sheep included under the general denominations of fat-tailed, or broad-tailed : some of them are found in Tartary, others in Persia, and others again both in the northern and southern portions of the African continent. One of the most remarkable is the Syrian variety, which is probably the same variety described by Herodotus more than two thousand years ago as being found in Arabia. The Syrian sheep has a tail of enormous size, sometimes weighing as much as seventy or eighty pounds, which is as much, or more, than an entire quarter of the animal : hence this sheep has been called the sheep of five quarters. Their large and heavy tails would become lacerated and diseased were they suffered to drag upon the ground ; the shepherds therefore fasten flat boards to their under surface, and sometimes add a pair of wheels or rollers, to facilitate the animal's progress over the ground. This practice prevails at the present day, and it is precisely the same as that which Herodotus mentions as prevailing in his time. These ponderous tails are chiefly composed of fat, and they are particularly referred to in the Mosaic law as the pieces which

were to feed the flame of the sacrifice. The inhabitants of Syria prize the fat for many purposes ; they eat it instead of butter ; they use it to lard meat, and also to exclude the air from meat that has to be preserved ; and it is sometimes a substitute for oil in their lamps.

These sheep, from the heavy load they have to drag after them, cannot be led out to pasture in rough and



rocky places ; nor could they flee from the attack of the wolf, or other savage animal : they have therefore frequently to be provided for and fed by hand, and must at all times be carefully watched and guarded.

THE YAK.



THE Yak, which, from its habit of grunting like a pig, is called the Grunting Ox, inhabits all the loftiest plains of high Asia between the Altai and the Himalaya. Its colour is black, the back and tail being often white. There are several varieties of the animal—the Noble Yak, the Plough Yak, the Ghainorik, and the Wild Yak. The Noble Yak is a handsome portly creature, with stately hump, curved cylindrical horns, head proudly erect, and adorned with heavy fringes of hair on the flanks, and a fine bushy tail—which ornaments, however, it does not assume until it has attained the age of three months, the calves being covered only with rough curly hair like that of the Newfoundland dog. The long white hair of the Yak's tail is in demand for various purposes: it is dyed red, and worn as a tuft in the caps of the Chinese; it is mounted in

a silver handle and becomes a “chowrie,” doing duty as a fly-flapper ; or it figures in processions, being borne before certain officers of state—the number of tails indicating their rank.

The Plough Yak is a plain, unattractive, short-legged beast, led by the nose, and holding its head downwards in a dejected way ; it is almost devoid of the long silky fringes of hair on the sides, and is generally seen shorn of its bushy tail, which it has been obliged to surrender to the demands of the market.

The Yaks will herd willingly with the common cows, and their owners often obtain a mixed breed by crossing them with their domestic cattle. When oppressed or overloaded as a beast of burden, the Yak expresses its sense of the injury done it by its monotonous grunting, and will continue its dolorous music as long as the infliction lasts.

THE MUSK-OX.

THE Musk-Ox is a small animal, about the size of the Highland cattle, and weighing little more than three hundred pounds ; but it appears much larger, owing to the mass of woolly hair with which it is covered. The horns of the bull are very large, and flat at the base, where they touch each other, forming a kind of helmet : as they sweep downward, between the eye and ear, they become round and tapering ; at the angle of the mouth they curl up again to the level of the eye, and are black at the tips. The horns of the cow are very different, being set widely apart and simply curved. The general colour of the hair is brown, and it is so long as to hang down below the middle of the leg, while it covers the throat like a beard, and conceals the short tail. The cow is shorter than the bull,

has smaller horns, and less hair on the throat and chest.

The Musk-Ox is found in the barren lands in the extreme north of America ; and it is partial to districts which are destitute of wood, though it frequents the banks of the larger rivers where the spruce-trees grow. Its food is grass and lichens. Notwithstanding its short legs, it runs with great speed, and when hunted,



often escapes over rocks and hills too steep for the hunter to follow.

The Musk-Oxen live together in herds, consisting chiefly of cows, there being very few bulls among them. The cow brings forth one calf about the end of May, or the beginning of June. Sir John Richardson, who had the best opportunities of becoming acquainted with the habits of these animals, tells us that—"If the hunters keep themselves concealed when they fire

upon a herd of Musk-Oxen, the poor animals mistake the noise for thunder, and, forming themselves into a group, crowd nearer and nearer together, as their companions fall around them ; but should they discover their enemies by sight, or by their sense of smell, which is very acute, the whole herd seek for safety by instant flight. The bulls, however, are very irascible, and, particularly when wounded, will often attack the hunter and endanger his life, unless he possesses both activity and presence of mind. The Esquimaux, who are well accustomed to the pursuit of this animal, sometimes turn its irritable disposition to good account ; for an expert hunter, having provoked a bull to attack him, wheels round it more quickly than it can turn, and by repeated stabs puts an end to its life."

The wool of the Musk-Ox resembles that of the Bison, but is of finer quality. In France stockings have been made of it, which are said to be equal to those of the finest silk ; but the wool cannot be obtained in sufficient quantities for the purposes of manufacture.

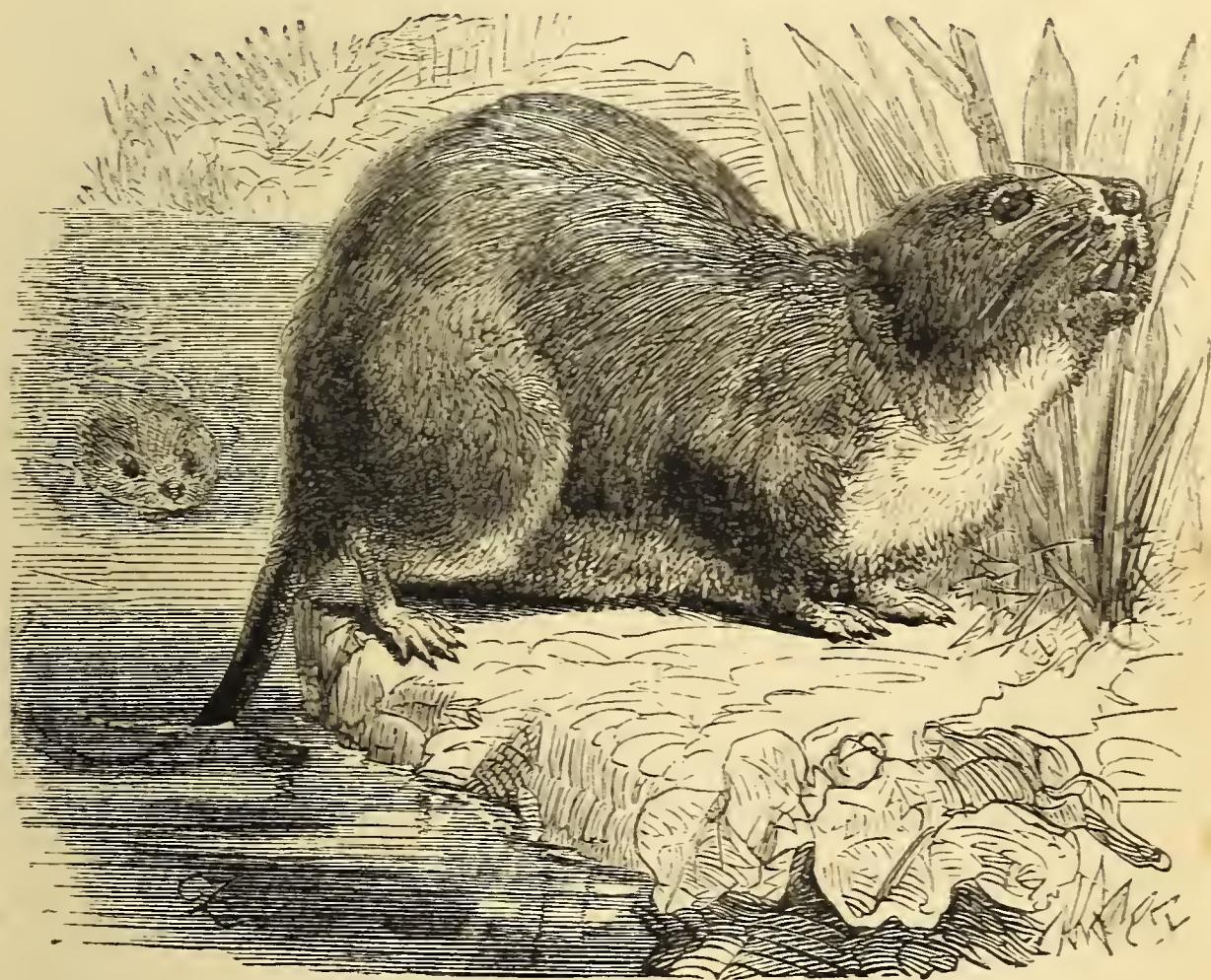
The flesh of this animal, when lean, smells strongly of musk ; when fat, it is of good flavour, but coarse, and inferior to that of other oxen.

THE WATER-RAT, OR WATER VOLE.

THE Water-Rat is found throughout the greater part of Europe. In form it resembles the common Brown Rat, but it is not so large, the average length of its body scarcely exceeding eight inches : its head is short and thick ; its tail is not more than half the length of its body ; and the colour of its fur, which is thick and glossy, is a reddish-brown, mixed with grey above and yellow-grey in the under parts.

The Water-Rat makes its home in the banks of

rivers, brooks, ponds and rivulets, burrowing in the bank, and generally making the entrance to its burrow at some depth below the surface of the water. It is common in trout-brooks, and is persecuted, and often wantonly killed by anglers, under the supposition that it devours the spawn and the young of the trout—a charge for which there is no foundation whatever, the food of this animal consisting entirely of vegetables,



and chiefly of aquatic plants and roots. It is known, however, at times to visit neighbouring gardens, and to regale itself upon growing culinary vegetables; White of Selborne mentions an instance of one which was found in the winter time, far from the water, in a dry snug nest which it had formed with grass and leaves, and had stored with upwards of a gallon of potatoes.

The Water-Rat is neat and cleanly in its habits, and

is often to be seen sitting on a bank smoothing its fur, and in a manner making its toilet. It usually breeds but once a year, producing from four to six young ones in May or June. Sometimes, however, it litters in April, and in this case will produce a second litter about harvest time.

Whilst angling one day in June, the writer watched a Water-Rat as it performed the following exploit: Emerging from its hole about a foot under water, it rose to the surface and swam to a small island in the middle of the brook. There it looked about for a few moments, then selected a straight hazel wand which grew among others, and cut it down with its sharp teeth in a few seconds. Then it essayed to drag the branch into the water, but the leafy twigs which grew on it had become entangled in the reeds and high grass; the Rat sought out the obstacles and bit them away, spending nearly half-an-hour in this process. Having at length launched the still leafy branch into the water, it swam with the thick end in its mouth towards its burrow. A new difficulty had now to be got over, namely, to sink the thick end of the branch as low as the mouth of the hole; this it effected by getting on the top of it and forcing it down, at the same time biting away the larger twigs which might have prevented its passage in the burrow. After surveying its work and traversing the branch from end to end, it took the thick end in its mouth, and, not without arduous labour and struggling, dragged it into the hole. The work was slow and difficult, and twenty minutes elapsed before the whole of the branch, which must have been nearly five feet in length, was drawn in. The little creature had probably a litter of young in its burrow, and wanted the material it thus obtained to dam the water, which was rising in the brook, out of its nest.

THE HARVEST MOUSE.



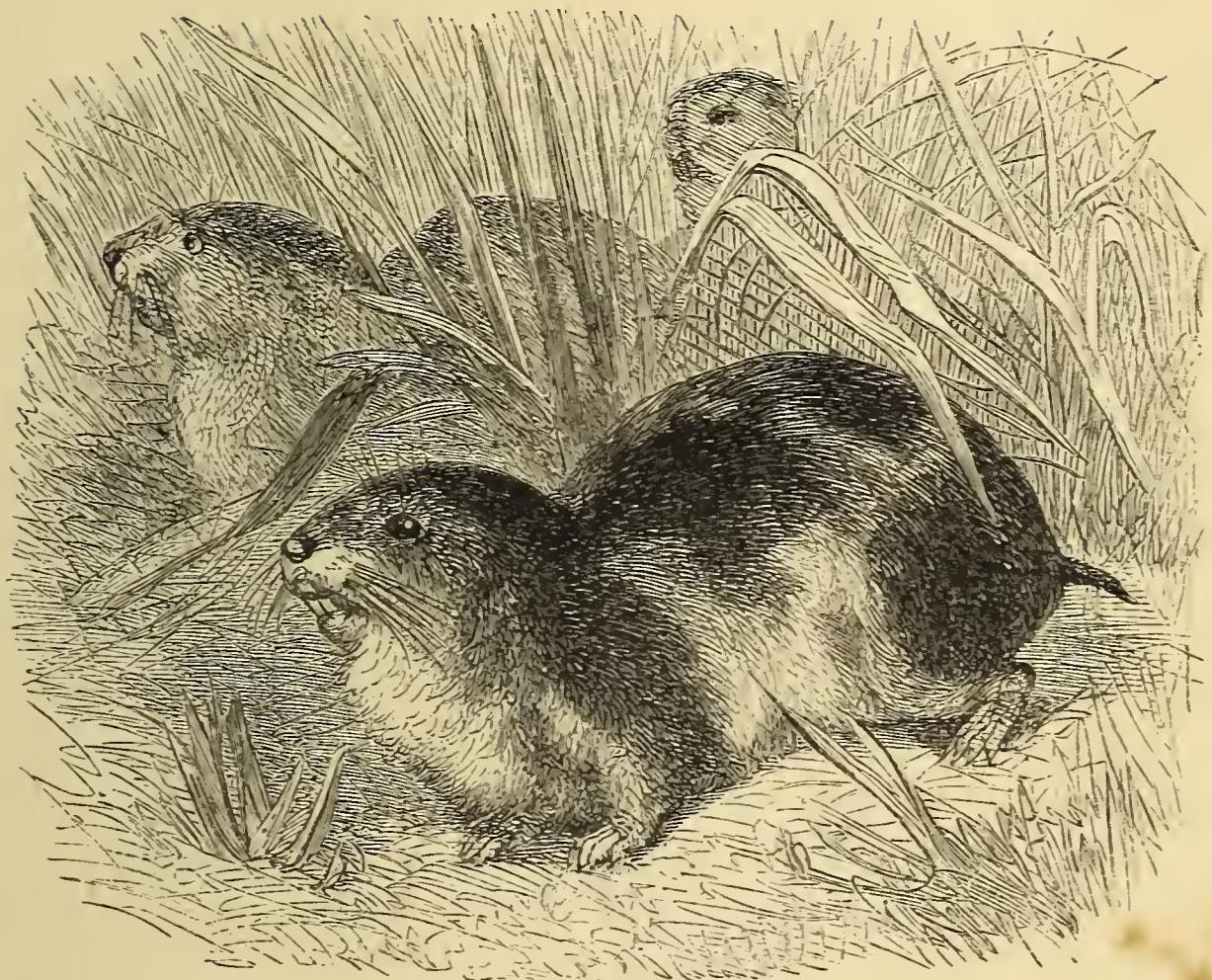
THE Harvest Mouse is said to be the prettiest, and is certainly the smallest, of the British mammalia. Its body is about two and a half inches long, and the tail, which is prehensile, measures nearly as much more—while its weight is but the sixth part of an ounce avoirdupois. In colour it is a reddish brown in the upper and white in the under parts.

This interesting little animal seems to have been first noticed in this country by the Rev. Gilbert White, of Selborne, about the year 1766. It is found from time to time in wheat-fields, and there in summer it builds its curious nest, and rears its young amidst the standing corn. Mr. White describes one of the nests as “most artificially platted, and composed of blades of wheat; perfectly round, and about the size of a cricket-ball; with the aperture so ingeniously closed that there

was no discovering to what part it belonged. It was so compact and well filled that it would roll across the table without being discomposed, though it contained eight little mice that were naked and blind. As this nest was perfectly full, how could the dam come at her litter respectively, so as to administer a teat to each? Perhaps she opens different places for that purpose, adjusting them again when the business is over; but she could not possibly be contained herself in the ball with her young, which, moreover, would be daily increasing in bulk. This wonderful procreant cradle, an elegant instance of the efforts of instinct, was found in a wheat-field suspended in the head of a thistle."

Not much is known of the habits of the Harvest Mouse in its wild state, beyond the fact of its being destructive to corn. It is found often in barns and ricks, whither it is supposed to be carried when the crops are gathered in harvest time. It is known also that in winter these little animals burrow deep in the ground, and make themselves warm lairs of dried grass, in which, there can be little doubt, they lay up stores of provisions for their use. Their food is not entirely vegetable: Mr. Bingley, who kept one of them for some time, discovered that it preferred insects to every other kind of food, and he was in the habit of feeding it with insects whenever he could get them. Ordinarily the Harvest Mouse does not live long in confinement; but, according to Mr. Bell, it may be kept for a long time in good health "by allowing it the optional use of a sort of little tread-wheel, in which it will often exercise itself, apparently to its amusement and satisfaction."

THE LEMMING.



THE Lemming is a small, active animal, not quite six inches in length, and with a tail measuring but half an inch. Its colour is a dark brownish black, varied with a tawny hue on the back and sides, and shading off to a yellowish white in the under parts. It is a native of the northern parts of Europe, where it is found in immense numbers ; it feeds on grass, lichens, reeds, the catkins of the dwarf birch, and other vegetables ; and it is noted for its irritable temper, its obstinacy, and dauntless courage and pertinacity. The Lemmings are described as swarming in the forests, and resenting the intrusion of travellers by demonstrations of anger and defiance. In the winter time they burrow in the snow to get at the lichens which clothe the rocks, and they open small passages to the surface to let in the air : in these retreats they often fall a prey to the Arctic fox.

The Laplanders eat them, comparing their flesh to that of the squirrel.

At unknown intervals of time, which are fortunately not of frequent occurrence, these mouse-like and apparently insignificant little creatures become a veritable plague to the inhabitants of northern countries, which they over-run and lay waste to a ruinous extent. Once every twelve or fifteen years an innumerable host of them appears, marching across the land in vast bands, and devouring everything green that lies in their way. Where they come from no man appears to know precisely, but their cruise is in a straight line, from which nothing, not even fire, will divert them. Pennant thus describes one of their irruptions in Norway, where they are the pest and wonder of the inhabitants : "They march like the army of locusts so emphatically described by the prophet Joel ; destroy every root of grass before them, and spread universal desolation : they infect the very ground, and cattle are said to perish which taste of the grass which they have touched ; they march by myriads in regular lines ; nothing stops their progress—neither fire, torrents, lake nor morass. They pursue their course straight forward with most amazing obstinacy ; they swim over lakes : the greatest rock gives them but a slight check, they go round it, and then resume their march directly on without the least diversion ; if they meet a peasant, they persist in their course, and jump as high as his knees in defence of their progress ; are so fierce as to lay hold of a stick, and suffer themselves to be swung about before they quit their hold : if struck, they turn about and bite, and will make a noise like a dog." They are followed in their march by crowds of foxes, lynxes, and other animals of prey, who devour them in multitudes ; and they are also driven by hunger to prey upon one another. None of them return to the place from whence they came ; they continue their march until they reach the sea, or some great water, where the diminished hosts finally perish.

THE HAMSTER.



THE Hamster is a stout compact little animal, about fifteen inches in length, with a tail of some three inches ; its colour is greyish fawn, which changes to yellow about the head and face, and deepens almost to black on the under parts. Like some other rodents it has large pouches in each cheek, which it distends at pleasure, and which will contain a large amount of food. It is found in many of the northern parts of Europe, and in some districts where it is very abundant it proves a perfect pest to the husbandman, who in his turn makes unrelenting war against it. The food of the Hamster is chiefly vegetable, consisting mostly of beans, peas, corn, and other grain cultivated by the farmer ; and though it also devours worms and mice, lizards and frogs, and other small animals, the service it renders by

the destruction of vermin is no sort of compensation for the ravages it makes among the growing crops.

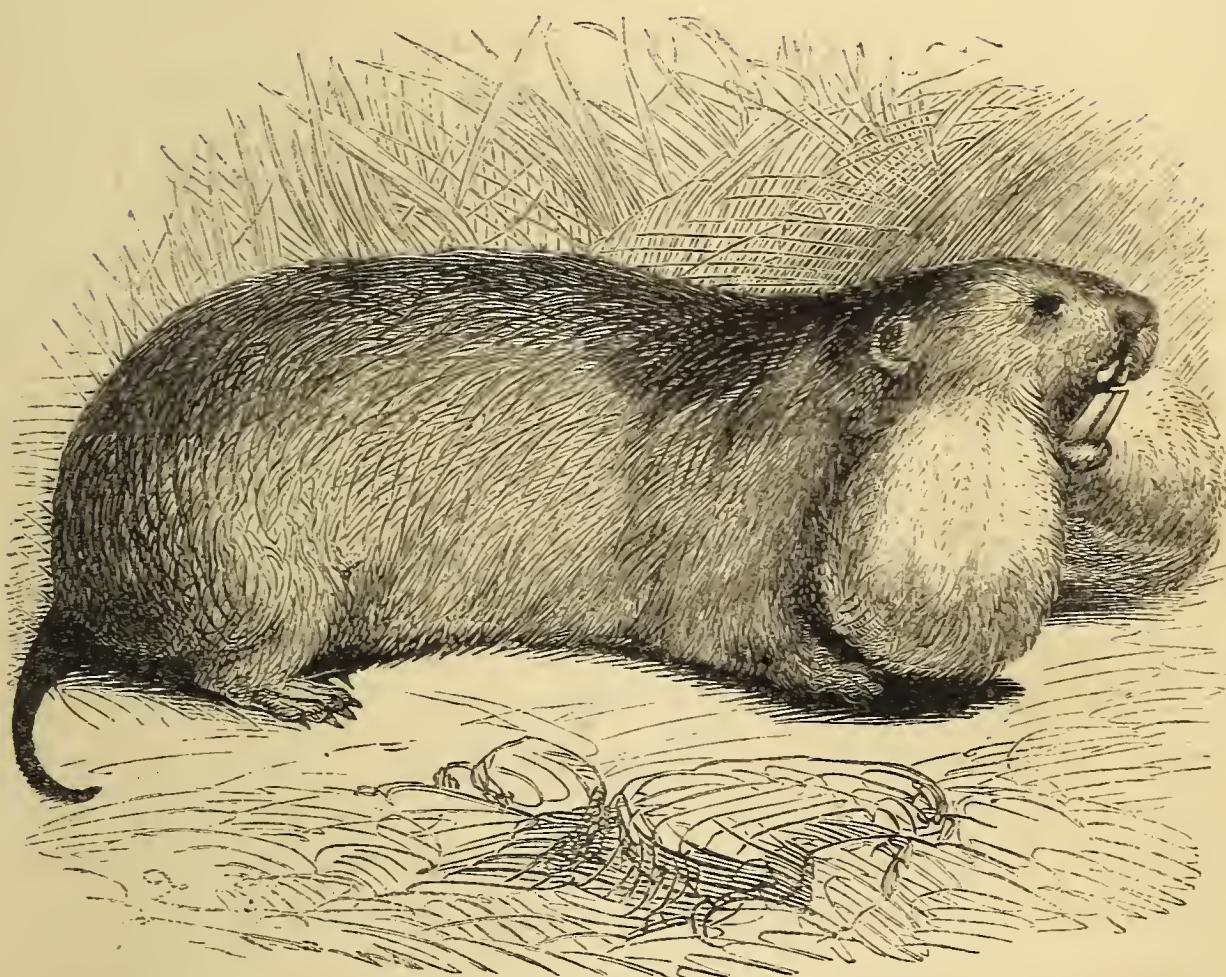
The Hamster lives in a deep burrow, which has at least two entrances, leading to several large chambers, in one of which the creature lives—the others serving for store-rooms. Each individual has a separate burrow, the males and females living apart, even in breeding time. They lie quiet in their burrows during the day, and only come forth at night to feed and to gather provisions for their winter use. It is in autumn, when the crops are ripe, that their depredations are most serious. A foraging Hamster fills his cheek-pouches with grain, cramming it down with his paws—runs off with the plunder to his burrow, stores it up, and comes back for another supply, and will continue thus to victual his store-house until he has accumulated enough for his maintenance during the winter. But he is not always destined to reap the full enjoyment of his booty: for when the harvest is over the plundered husbandman will turn hunter, and tracking the marauder to his home, will often recover the stolen property, and capture the thief along with it. Fifty or sixty pounds' weight of grain is not uncommonly found in one burrow, and in some instances as much as a hundredweight of beans has been recovered from a single hole. Tens of thousands of Hamsters are sometimes thus destroyed in a single district, and their skins sold in the market.

The Hamster is accounted one of the stupidest animals on the face of the earth—not having wit enough to be sensible of danger when danger is imminent. It will fight furiously when it has no chance of victory, and when flight might save it; it will attack man or dog without hesitation, and will assail with unreasoning fury either stick, stone, or any other weapon or missile used against it. It is often seen to fight desperately with its own species.

Hamsters are astonishingly prolific, the female pro-

ducing several broods in a year, each brood averaging from eight to ten in number. But for their extraordinary fecundity it is likely that they would ere this have been exterminated, so thoroughly are they detested, and so systematically are they persecuted by the cultivators of the soil.

THE CANADA POUCHED RAT.



THIS singular little animal, which in Canada goes by the name of "Mulo," and sometimes by that of "Gopher," is about twelve inches in its entire length, the tail measuring only two inches. It is furnished with long incisor teeth projecting beyond the lip, and with cheek-pouches of great size, which are lined with a covering of fine hair. The form of the animal considerably resembles that of the British mole: the colour of the

fur is reddish-brown on the back and upper parts, fading into a dusky ash-colour on the under parts, the feet being white: the fur is longest on the back, and extends along the tail a third of its length.

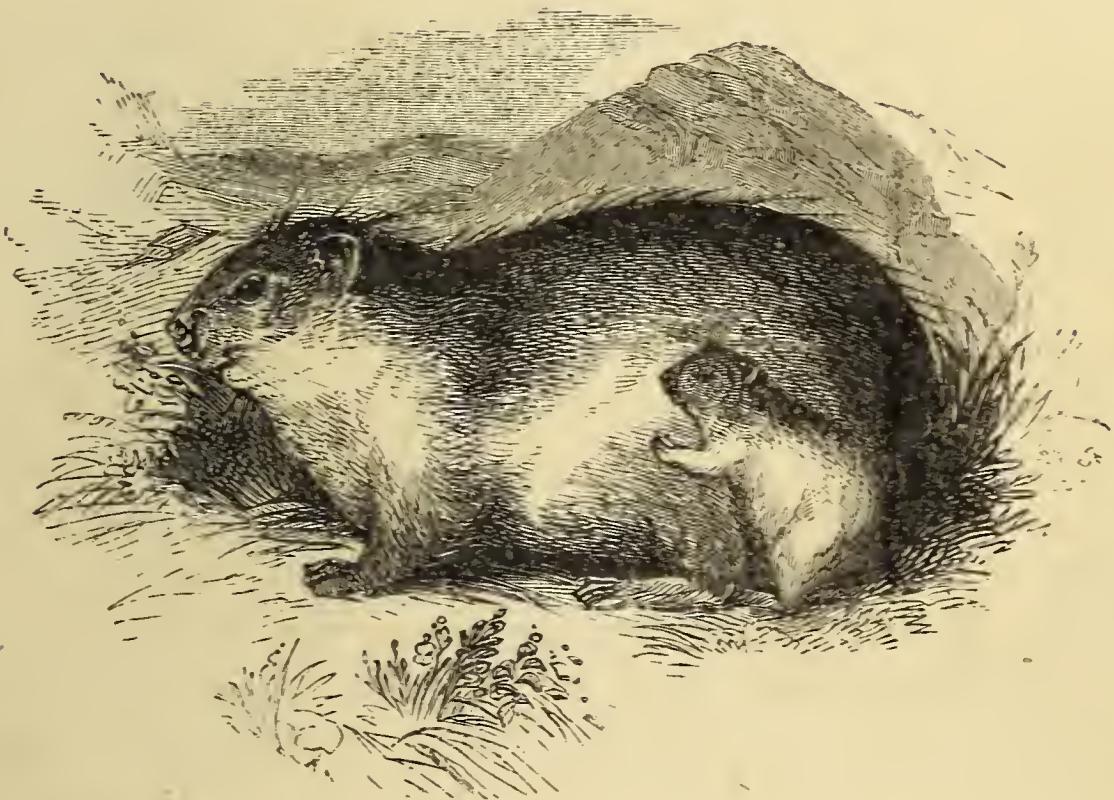
These animals live in burrows under ground, and there they carry out long tunnels, or galleries, the course of which is marked on the surface by small heaps of earth thrown up at intervals. These tunnels often extend to a considerable distance, spreading out in various directions, and their formation proves most destructive to the trees and shrubs of the plantations infested by the Mulo, as the animal gnaws away all the roots which obstruct its course, and thus destroys numbers of the young trees. The female does not make her nest in any of the galleries or tunnels, but in a snug circular chamber hollowed out for the purpose, and which she lines with dried grass and leaves, and the softest fur plucked from her body.

Although spending most of their time under ground, the Mulos are fond of paying an occasional visit to the upper surface; and it is observed that when one of them does so, he does not emerge from any of the ready-made communications with his subterranean abode, but from a new one excavated for the purpose, and in some spot hitherto undisturbed. On coming forth it begins feeding, or rather cropping grass and soft herbage, and stowing it away in the cheek-pouches—disappearing by the way it came as soon as they are full. If disturbed while thus foraging, it takes to its retreat, but instead of traversing the tunnel through which it came out, will burrow for itself a new one in another direction.

The short legs and clumsy body of this animal render it incapable of rapid motion on the surface of the ground, though it can run with tolerable speed in the underground tunnels, where there are no irregularities to obstruct its progress. If laid on its back it has great difficulty in resuming its proper position, and

does so by laying hold of some reed or twig, and pulling itself round until it recovers its footing. It is not wanting in courage, and in fighting can inflict severe wounds with its teeth. In captivity it shows itself savage, biting and squeaking with rage, and constantly employing its teeth in attempts to regain its liberty.

THE HYRAX (CONEY).



THE Hyrax is a small animal, about the size of a rabbit, and covered with short thick fur: it was formerly classed with rabbits and hares, but of late years has been shown to belong to the *pachydermata*, or thick-skinned tribe.

There are several species of the Hyrax, one of which is found in Syria and Northern Africa, another in South Africa, and a third in Western Africa. The Syrian Hyrax has been shown to be the "Coney" of Scripture; it is brownish-grey above, and white in the lower parts, and is

about a foot in length. It is supposed to be identical with the Askoko mentioned by Bruce, who says that it does not burrow in the ground like the rabbit, but lives in holes and hollows in the rocks, delighting in the mouths of caves or clefts into which it can retreat from danger. They are gregarious, dozens of them being often seen together of an evening sitting on the fragments of rock and enjoying the warmth of the sun's rays. They are very timid, and seem to crawl cautiously along the ground a few steps at a time ; and they always have a sentinel on the watch, at whose signal of alarm they instantly disappear.

The Hyrax of South Africa (*Hyrax Capensis*) is called the Klip Das, or Rock Rabbit. It does not differ much from the Syrian species, either in appearance or habits—living in families like them, and showing the same fondness for the warmth of the sun, and the same timid caution. The food of the Hyrax is entirely vegetable, consisting of shrubs, the shoots of plants and flowers, herbs and grasses. They are easily tamed if taken in hand when young, and testify their attachment to those who use them well, and are scrupulously clean in their habits.

The Hyrax has many enemies: the birds of prey pounce upon them and carry them off, and the carnivorous beasts devour them in great numbers. They are also hunted by the natives of South Africa, who prize them as food—the flavour of their flesh resembling that of the rabbit.

The female is supposed to produce but two young ones at a time.

THE EUROPEAN MARMOT.

THE Marmot is about the size of a full-grown rabbit, and is not much unlike the rabbit in the colour of its fur ; its average length is about sixteen inches, the tail

measuring six inches more. The head and upper part of its body are a brownish-ash varied with a tawny hue—the legs and under-parts being of a lighter tint. It has large cheeks, and round short ears concealed in its thick fur. Though this little animal is not native in England, it is tolerably well known here, numbers of them being brought hither by the itinerating Savoyards, who make them partners in their mendicant life. They



are found in the Alps and Pyrenees, and in the mountainous districts of Northern Europe. They live in little communities of from five or six to ten or twelve in number, associated apparently for the purposes of mutual protection. At their feeding time they always place a sentinel on the watch, who, on the approach of danger, gives the alarm by a whistling noise, when all scamper off to their burrows. These burrows are of a peculiar kind, and are excavated with much labour and

ingenuity. They consist of several chambers, and there are always two entrances to them, which are by tunnels about six feet in length, and barely large enough to admit the body of the animal. The chamber in which the community lives is large, sometimes measuring seven feet in diameter, and is well lined with soft warm moss, while another apartment, or perhaps two others, of less dimensions, are used as storehouses, where the provident little creatures pack away reserves of dried grapes and other provender, for their support during the winter.

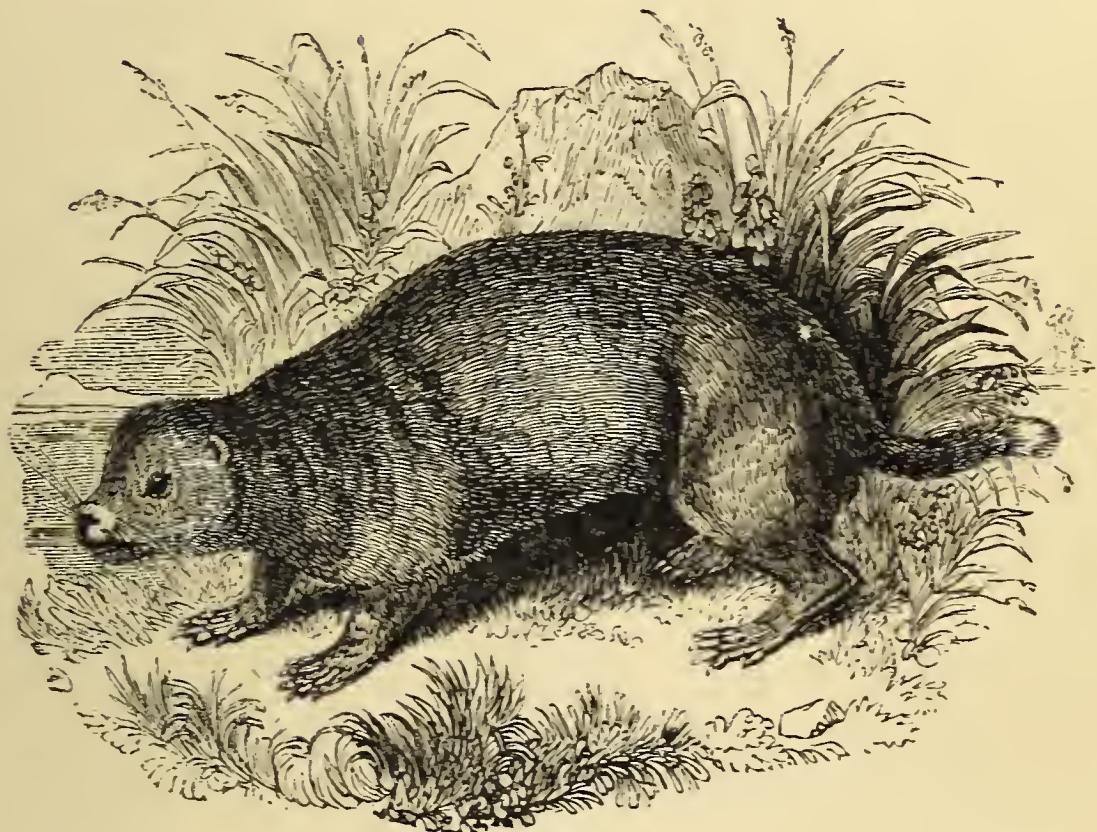
The Marmots retire into their burrows about Michaelmas, and having stopped up the entrances, they remain there until the following April. The females, during their imprisonment, give birth to their young, of which there are three or four to a litter. The Marmots are fattest, and their fur is in the best condition, at the period when their hybernation is about to begin, and it is at this crisis that they are most eagerly hunted by the mountaineers. Though exceedingly timid by nature, this little animal will fight desperately with its teeth when it has no other chance of escape. Its flesh is sometimes cooked and eaten by its captors.

The Marmot is easily tamed, but though playful enough in a rather clumsy way, it is too dull to be taught any tricks, and is apt to return a caress by an angry bite. They will eat almost anything that is offered them: in feeding, they lift their food to the mouth with their fore-feet, and sit up in the manner of a squirrel: they show great partiality for milk, lapping it with murmurs of satisfaction.

THE PRAIRIE DOG, OR WISH-TON-WISH.

ON the lands bordering the Missouri, and other large rivers of North America, the Prairie Dog is found in great numbers, collected together in settlements called

by the name of "Dog-towns." Thousands of these little animals here live together in perfect harmony and apparent enjoyment of their lot, finding their food in the surrounding vegetation. They form their habitations by burrowing in the ground; but however numerous they are, they always leave certain broad tracts, or roads, through their settlement, in which no burrows are made.



The Prairie Dog is about sixteen inches in length, the tail being three inches, and ending in a kind of brush. The animal is furnished with small cheek-pouches and large protruding incisor teeth: its colour is a reddish-brown, mingled with flecks of black and grey on the upper-parts, and a greyish white on the throat and under-parts. It has the habit of yelping like a small dog when it is alarmed, and from this trait it has derived its name.

Captain Basil Hall and other travellers have described the spectacle of one of these "Dog-towns" as

most amusing and interesting. The whole of the community, they state, are under the control of a leader, or "Big Dog," who seems to regulate their affairs by issuing his orders from the top of the mound at the entrance of his burrow, while the little animals are seen skipping about and rushing from one burrow to another, as if engaged in carrying them into execution. Whoever would witness this busy scene must approach with the utmost caution, for if he be perceived by any of the sentinels, the alarm is given by a sharp, quick yelp, which is instantly repeated on every side, and is followed immediately by a general scamper of all the inhabitants, each to his proper domicile: for a few moments there is an indescribable scene of confusion—heads, tails, and legs, all appearing jumbled together in a flying cloud of dust—and then the entire population have vanished from sight. Their alarm, however, soon subsides, and in a minute or two, if the spectator keep quiet, he will see them come forth from their holes one after another, until the community are as busy and lively as they were before.

The burrows of the Prairie Dogs are made with a steep descent at the entrance, and the owners do not creep into them, as other burrowing creatures do, but plunge into them head-foremost, throwing their hind legs and tails into the air in a manner most ludicrous to witness. Looking to the circumstances of their lot, a community of Prairie Dogs must often have very serious business to discuss, and grave domestic dilemmas to submit to the sagacity of their leader, for it is indisputable that their comfortable homes are frequently invaded by the burrowing owl and the rattlesnake, both of whom it is too well ascertained prey upon the young dogs. It was formerly thought that the owls, snakes, and Prairie Dogs lived together by mutual consent, but that has been shown not to be the case—the owls and the snakes take forcible possession, and the poor little dogs cannot turn them out.

The Prairie Dog is very tenacious of life, and manifests both affection for its companions and courage in defending them.

THE DORMOUSE.



THE Dormouse is an engaging little animal, not more than five inches long, the tail, which is thickly covered with hair, measuring half of that length. Its colour, when full grown, is a light, foxy brown, becoming white on the throat and under-parts of the body, but when young it is the same colour as a common mouse. It usually makes its nest in some close bush or tree, where it can be well concealed from view, and here it passes the entire day, only coming abroad in the evening and at night in search of food. The nest is large, and com-

posed of dry leaves, long grass, portions of thin bark, and other materials ; and wherever one of them is found, it is generally the case that others are not far from it—the Dormice being fond of living in companies. The female has usually three or four young at a time, who are born about the beginning of summer ; they are blind at their birth, but are able to see in a very few days, and are soon strong and active enough to provide for themselves. The food of Dormice is supposed to be entirely vegetable, and consists chiefly of nuts, acorns, fruits, seeds, and grain. As this little creature shuts itself up in its nest and sleeps away the coldest season of the year, it employs the leisure of the summer time in gathering and storing up a supply of food for its occasional wants when it wakes up during the intervals of mild weather. It does not carry these loads of food to its nest, but deposits them in different places of concealment not very distant—so that if one or more of its treasures is rifled by some other animal, it has still a resource in the rest. It does not often consume much of its hoard during the winter, as it is locked in slumber as long as the cold weather continues ; but it finds the advantage of its forethought in the spring, when it is awake and hungry, and there are neither fruits, nuts, nor grain yet to be found on which it can feed.

It is very difficult to catch a Dormouse when he is abroad among the branches ; his movements are even more rapid than the squirrel's, and he will make his way among boughs so thickly placed that it is impossible for anything to follow him. He is, therefore, generally caught while asleep in his nest, where he is found curled up like a ball, and in that state will suffer himself to be handled, and even rolled about, without showing any sign of life.

The Dormouse is greatly prized as a pet, and is sold in London by the bird-fanciers and others, who provide him with a suitable cage having a dark inner

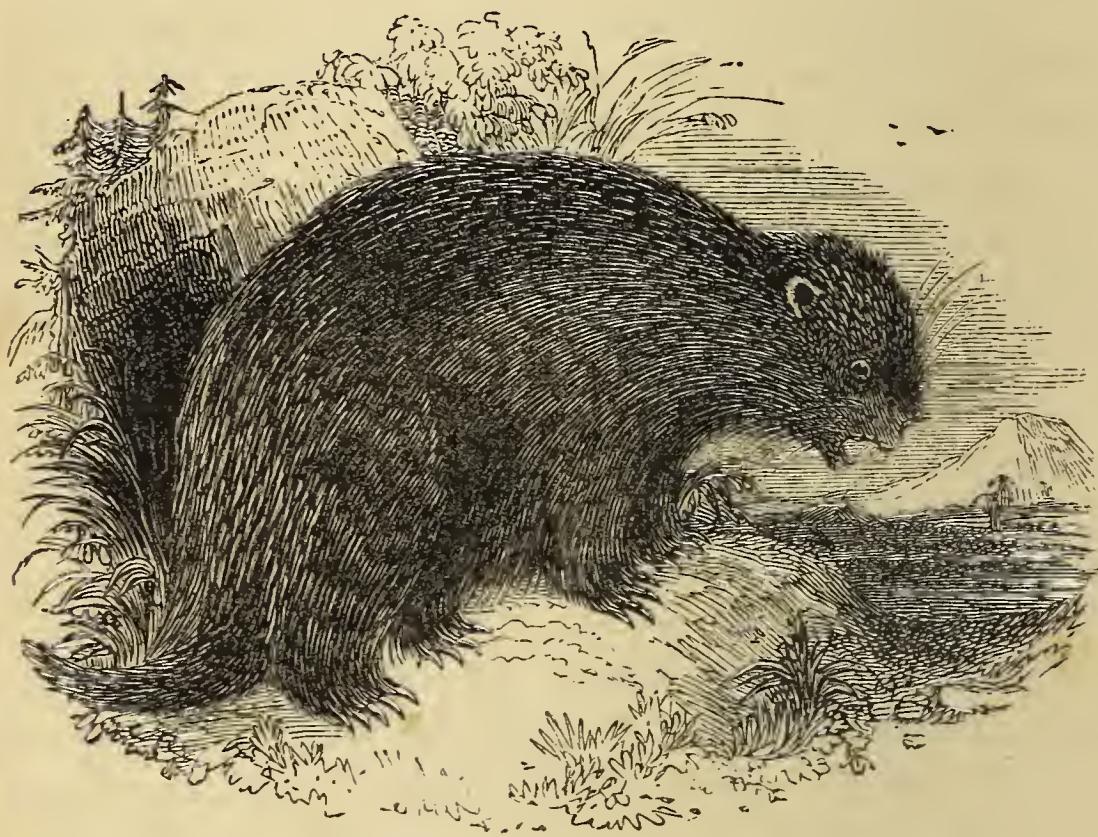
apartment for his night and winter quarters. He is a quaint little fellow, and his antics are amusing and graceful. When he feeds, he takes the nut or fruit in his fore-paws, and bites away at it deliberately and with an air of consideration, sitting upright all the while on his hind-legs. Sometimes when feeding in a tree or bush, if the branch he is on is not broad enough to afford him a seat, he may be seen hanging from it by his hind-feet, and eating as contentedly as if he were seated in his usual manner. Persons who keep Dormice as pets should be careful never to disturb them in their winter sleep, and especially to avoid exposing them suddenly to severe cold. If one is taken out of its warm nest on a frosty day, the sudden cold will awaken it—and it is more likely to die than to go to sleep again.

THE CANADIAN PORCUPINE.

THE Canadian Porcupine, or Urson, is a native of North America, where it lives in the forests, feeding partly on leaves and fruits, but chiefly on the bark of trees. It is about four feet in length, including the tail, which measures some nine inches. It is furnished with spines, or pointed quills, shorter and less in quantity than those of the Porcupine of the Western hemisphere, the longest of them being placed in the tail and hinder quarters ; and it is covered with deep brown coarse hair, in which the shorter quills, which are about two inches in length, are imbedded.

The Urson is a sluggish and greedy creature, and is most destructive in his method of feeding. Preferring the bark of a certain kind of pine to almost any other food, it haunts the districts where these trees are found, and climbing to the upper branches, eats its way regularly to the bottom. When it has done with one tree

it ascends the next, and destroys that in the same manner, so that its track through the forest is marked by the bare and dead or dying trees it leaves behind it. The Indians and backwoodsmen hunt it with dogs, which do not overcome it without suffering from the wounds it is able to inflict with its pointed quills : the quills are armed with minute barbs or teeth directed backward, and will bury themselves in the wound they



make, unless they are carefully picked out. Sometimes the tree in which the Urson is committing its ravages is cut down, and the animal killed by blows on the head. In winter time it is often discovered in its lair by the track which it leaves in the snow through dragging its tail along the ground.

The lair of the Urson is generally beneath the roots of an old tree, and it is supposed to pass much of its time in sleeping ; when disturbed, it utters a whining noise. It pairs in the latter end of September, and the young, two in number, are brought forth in April or May. The Indians eat the flesh of the Urson, which

bears some resemblance to pork ; they use the quills for ornamenting mocassins, pouches, belts, and other articles, and the skin with its fur for clothing.

THE AGOUTI.



THE common Agouti is a native of Brazil and Paraguay, and is also found in the West India Islands. It is about the size of a hare, measuring about twenty inches in length. The head resembles that of the rabbit, the nose being thick and puffy ; the upper jaw is longer than the lower ; the ears are round, and bare of fur, and the eyes are large. The hair of the body, which is coarse though glossy, is a bright brown colour curiously mingled with yellow and black, giving it a speckled appearance ; it is very thick and long on the hinder parts, where it is of a golden yellow.

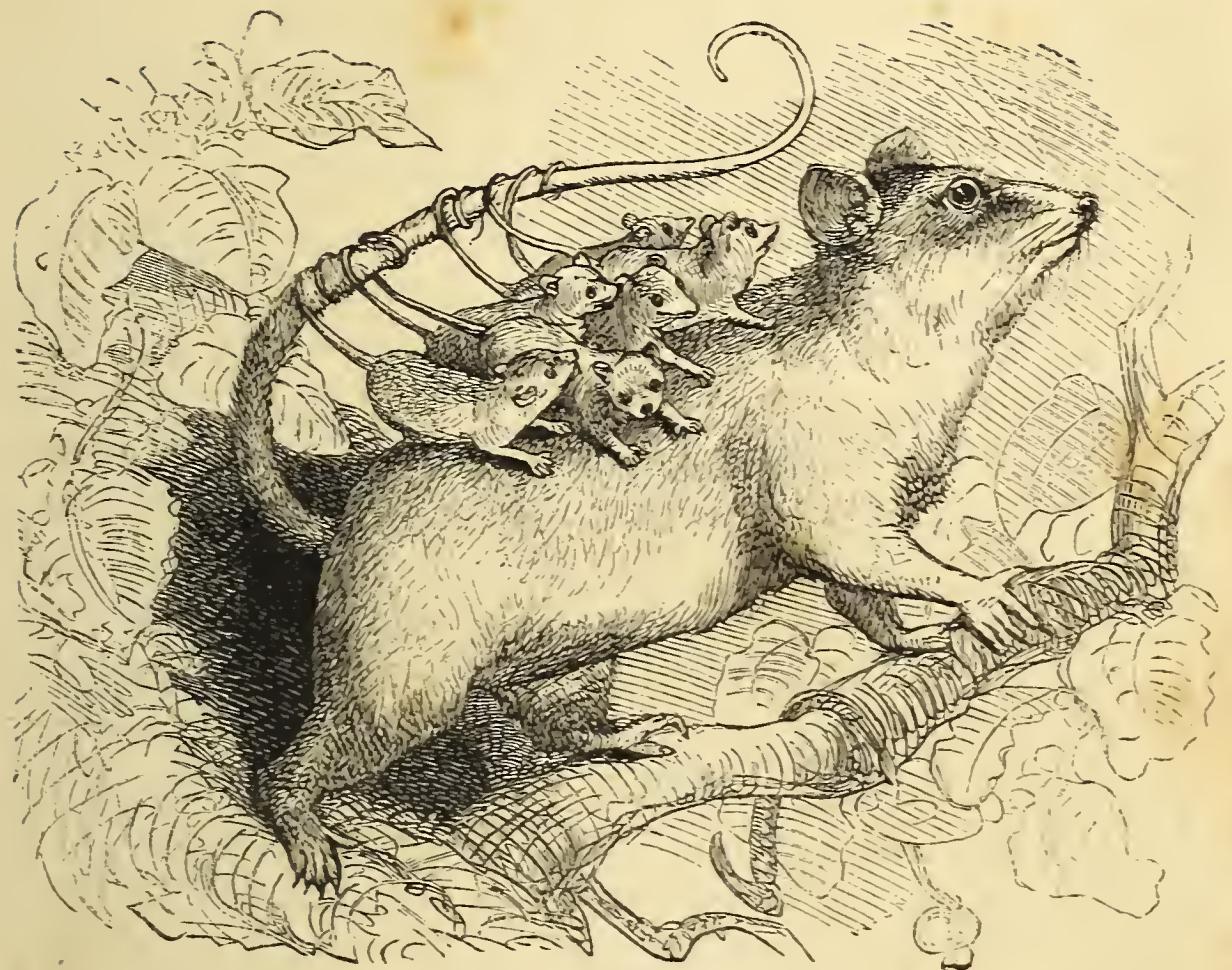
The food of the Agouti is almost entirely vegetable ; it is a most voracious animal, and from its marked preference for cultivated products, is a sad plague to the husbandman. It digs up the potatoes and yams, and is so destructive to sugar-canæs that the sugar-growers are obliged to exterminate it from their lands in order to insure a crop.

The Agouti is nocturnal in its habits, spending the day-time in its lair in some rocky cleft, where twenty or thirty of them live together, sallying forth at night to feed. Though armed with long and strong claws, it does not burrow in the ground, but makes good use of them in rifling the cultivated soil of the roots and tubers of which it is fond ; it also climbs trees easily, and devours fruits of various kinds, showing a particular partiality for nuts. It is quick and active in its movements, and can run with great swiftness, though not for any length of time ; it therefore prefers for its residence those localities where it can find shelter within a moderate distance.

This creature can be easily tamed, but not so easily cured of its propensity to bite and gnaw through any thing that comes in its way ; and as it can cut its passage through a stout wooden door in a few minutes, and has no respect for furniture, its domestication is not reckoned desirable. It is remarkable that, formidable as are its teeth, it does not attempt to bite when captured by the hand, but only squeaks plaintively while struggling for liberty. The flesh, when cooked, is white and tender, and is a common and favourite food in many parts of South America.

Another variety of the Agoutis is the Black or Crested Agouti. This is smaller than the common Agouti, being about the size of a rabbit. It is almost uniformly black in colour ; it resembles the common Agouti in its habits, and is found in the same climates, but is considered not to have so extensive a range.

MERIAN'S OPOSSUM.



THIS curious little creature, which is a native of Surinam, is one of those marsupiated animals which are devoid of a true pouch—the place of which in this instance is merely indicated by a fold of the skin. It is not more than six inches in length from the tip of the nose to the base of the tail—the tail itself measuring about seven inches, or an inch longer than the whole body. In form and general appearance Merian's Opossum is not unlike a rat, but it is considerably smaller, standing as to size midway between a rat and a mouse. When seen upon the ground, which is not often, it is observed to move with a slow and awkward gait; but in its proper home, among the branches of trees, it is active and agile, and its movements are rapid and graceful.

The fur of this small Opossum is short and close to the skin; it is of a pale grey-brown on the upper

portions of the body, shading off into yellowish white on the under parts: the limbs and feet are of the same light hue, and so are the forehead and other portions of the head: a deep brown mark encircles the eyes and extends forward above the nose, forming a small black patch.

The manner in which the female accommodates her young is most curious, and indeed comical. Having no pouch in which to shelter them, like other pouchless Opossums she transfers them to her back, where they hold on with their diminutive hand-like claws tightly clenched in the mother's fur. But, to give them further support, the mother erects her long tail horizontally over her back, and the little ones twist their own tails around it, and thus they may be seen to the number of half-a-dozen or more, securely fixed and riding in perfect safety. Thus loaded with her family, the mother leaps and runs from branch to branch in search of sustenance for herself and her offspring. The tail of Merian's Opossum is, of course, highly prehensile: in the adult it is covered with hair of the same colour as that of the upper part of the body, with the exception of the tip, where it is white.

The food of this Opossum is principally insects, grubs, and the smaller reptiles, and larvæ which it finds among the branches and in the forks of trees; but it probably feeds also on berries, young buds, tender bark, and other vegetable substances.

In the British Museum there is a stuffed specimen of Merian's Opossum with her young family in the position described above.

THE TASMANIAN (OR ZEBRA) WOLF.

THE Tasmanian Wolf is about the size of the Jackal, averaging four feet in length, of which the tail measures about sixteen inches. Specimens, however, have been

occasionally seen of a much larger size, and measuring as much as six feet in total length. The colour of the fur is a greyish brown tinged with yellow, and along the back runs a series of stripes, short at the shoulders, and lengthening as they approach the tail, being longest over the haunches. It is a fierce and courageous animal, and is known to defend itself desperately, proving more than a match for any single dog. It is



not at all choice as to its diet, but devours when hungry almost anything that comes in its way. It hunts the kangaroo, or any small quadruped, and will contrive to capture and make a meal of the duck-billed platypus, in spite of its swimming, diving, or burrowing in the earth. It prowls along the shore, and feeds upon the molluscs, shell-fish, crabs, dead seals, or any refuse matter the tide may cast up ; and it has been known even to devour the prickly echidna.

At the first colonization of Tasmania the Zebra Wolf proved a bitter plague to the settlers, ravaging their folds and harvests ; but the farmers shot, trapped, and hunted them down so effectually, that they now but rarely show themselves in a cultivated district—keeping for the most part to the waste and mountainous regions.

The lair of the Zebra Wolf is usually some completely dark recess in the rock, where it prefers to remain during the whole of the day-time, rarely coming forth to feed but in the night. When seen by day, it is slow and uncertain in its movements, and seems annoyed by the excessive light to which its eyes are unaccustomed.

The female produces three or four young ones at a birth.

THE MYRMECOBIUS.

THE Myrmecobius is an elegant little animal found in Australasia, in the neighbourhood of Swan River, and inhabiting districts abounding in decayed trees and ant-hills. It is about the size of the English water-rat, or water-vole, measuring some ten inches in the body, the tail being about seven inches more. Its general colour is a bright fawn at the shoulders, deepening into brown, and almost into black towards the hinder parts ; the back is barred by a series of white bands tapering to a point down the sides ; the under parts are of a tawny white. The tail has a grizzled appearance, owing to the mixture of black and white hairs.

The movements of the Myrmecobius resemble those of the squirrel ; it jumps rather than runs, elevates its tail over its back as it proceeds, and stops repeatedly in its flight to look around anxiously in all directions, as if alarmed. When pursued it seeks some place of refuge or concealment, resorting generally to some rocky cleft or hollow tree. It can hardly be induced to quit

such a shelter by any artifice of the pursuers : one of these animals, which had taken refuge from a party of explorers near Swan River, suffered itself to be smoked to death rather than submit to being captured.

The food of the Myrmecobius is supposed to be insects, and chiefly ants, which it takes by protruding its long thick tongue into their nests. It is known also to eat hay, and certain substances which exude from



the branches of trees. Its usual habitation is the hollow trunk of a tree or a hole in the ground. The female produces from five to eight young ones at a time ; unlike the other marsupials, she is not provided with a pouch, but shelters her young in the long hair of the under part of her body.

These little creatures are gentle in disposition, offering no resistance when caught, beyond struggling to get free, and expressing their dissatisfaction by a kind of fitful snorting or grunting.

THE BANDICOOT.



THE Bandicoots form a group of small animals which, from their form and colour, have been compared to overgrown rats; they vary in size from about seventeen to twenty-one inches in length, of which length the tail forms a fourth part. They are natives of Australia, where from their peculiar habits they are not often fallen in with by the casual traveller, though they abound in rocky and stony places, especially in the interior of the country. Their hind feet are much longer than the fore-feet, and from this cause their running consists of a succession of leaps like the running of the hare or rabbit. Their feet are furnished with broad powerful claws, which enable them to burrow in the ground very rapidly, and to tear up the roots of herbs and shrubs. Like the kangaroo and opossum, and others of the same family, the Bandicoots carry their young in their cradle-pouches until they

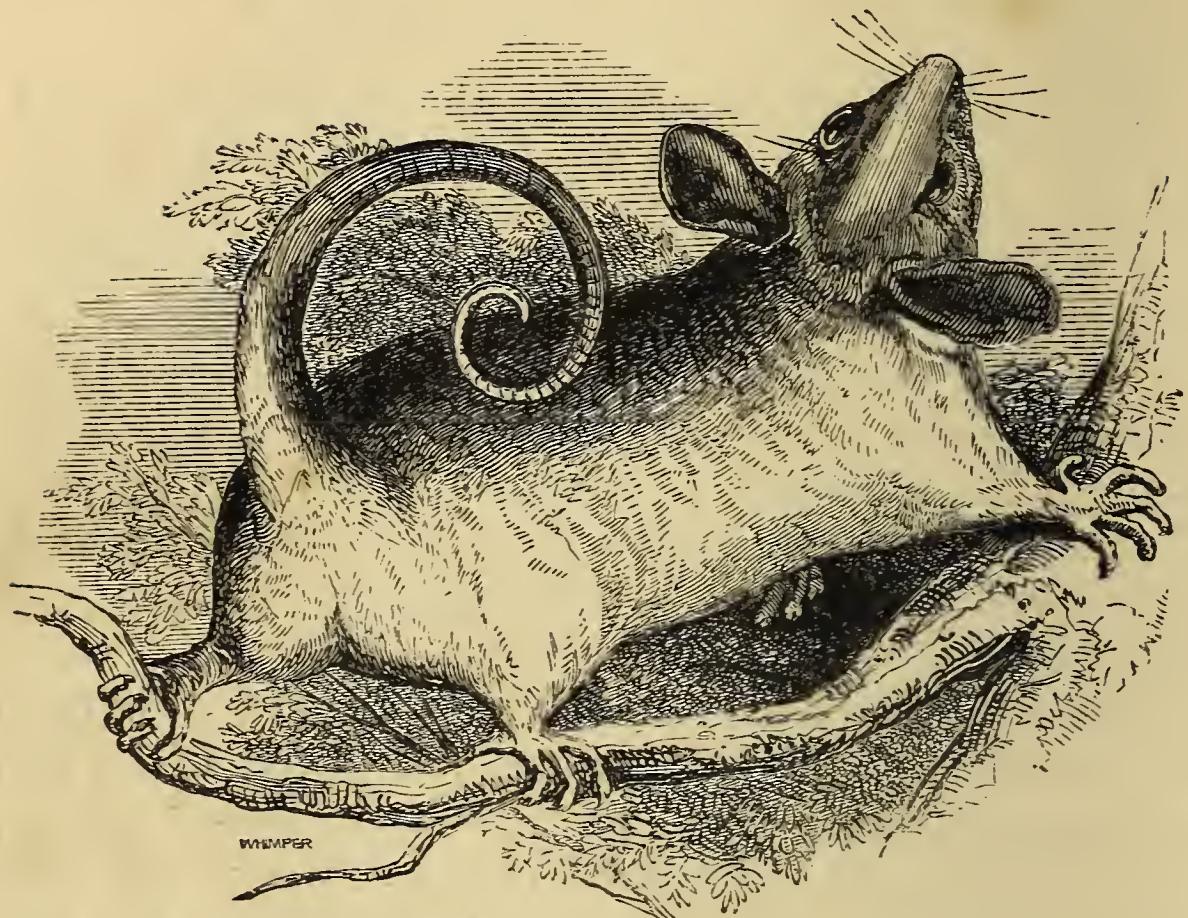
are old enough to provide for themselves. Their food consists of seeds, berries, and roots, and of the insects, worms, and larvæ with which the soil of Australia abounds.

There are several species of the Bandicoots which are well known to naturalists, but there are in all probability other species yet remaining to be recognised. The Banded, or Stripe-backed Bandicoot is so named from the stripes or bands on its fur, which are chiefly on the hind quarters as far as the root of the tail ; its general colour is a kind of olive hue on the back, shading into yellowish at the sides, the under portions of the body being a whitish grey. This species is widely spread over the eastern and south-eastern parts of Australia.

The Long-nosed Bandicoot differs from the above in the greater length of its snout, the colour of its fur, and its larger size. Its outer hair is coarse and bristly, and in colour not unlike that of the common rat ; but under this outer fur is an inner coat which is soft and fleecy, and of an ashy colour, and well fitted to maintain the warmth of the body in the cold mountainous districts which the animal inhabits.

A third species is the Blunt-nosed Bandicoot, distinguished by its short blunt snout and broad round ears. This is the Bandicoot best known to the colonists, whose gardens and cultivated grounds are sometimes infested by it, to their serious loss. The colour and quality of its fur are the same as in the Long-nosed Bandicoot. It differs from that species, however, in the arrangement of its teeth, which seem to intimate that its food is more exclusively of a vegetable kind.

THE DORMOUSE PHALANGER.



THE Phalangers are among the smallest of the marsupial animals, and their habits resemble those of the squirrels. They are found in Australia and Van Diemen's Land, and also in the Moluccas or Spice Islands of the great Indian Archipelago. They live in trees, and are good climbers, but are not very agile in their movements. In the day-time they conceal themselves in the forks and hollows of trees, and come forth at night to feed upon the tender leaves and the fruit. It is said that if they suppose themselves to be watched, they will hang motionless from a branch as if dead, and that if one thus suspended is watched continuously it will hang until it can no longer bear its own weight, and drops to the ground from fatigue. They are pretty little animals, with short heads, hairy ears, stout woolly fur, long prehensile tails, and furnished with good strong claws. Their flesh is prized on account of its delicate

flavour, though during life the animal emits an unpleasant odour; its fur is valued for its thickness and softness.

The Dormouse Phalanger is said to be the smallest and prettiest of the whole group. In size and form it somewhat resembles our English dormouse, after which it has been named, but the shape of its head is different, the nose being longer and more pointed. It has been thus described by Mr. Bell: "In their habits they are extremely like the dormouse, feeding on nuts and other similar food, which they hold in their fore paws, using them as hands. They are nocturnal, remaining asleep during the whole day, or, if disturbed, not easily roused to a state of activity, and coming forth late in the evening, and then assuming their natural and vivacious habits: they run about a small tree which is placed in their cage, using their paws to hold by the branches, and assisting themselves by their prehensile tail, which is always held in readiness to support them, especially when in a descending attitude. Sometimes the tail is thrown in a reverse direction, turned over the back; and at other times, when the weather is cold, it is rolled closely up towards the under part, and coiled almost between the thighs. When eating they sit upon their hind quarters, holding the food in their fore paws, which, with the face, are the only parts apparently standing out from the ball of fur of which the body seems at that time to be composed. They are perfectly harmless and tame, permitting any one to hold and caress them, without ever attempting to bite; but they do not evince the least attachment either to persons about them, or even to each other."

THE OPOSSUM MOUSE.



THIS little animal is a native of South Australia, and is very common in the neighbourhood of Port Jackson. It is about the size of the common mouse, not being much more than six inches in length, including the tail, which is nearly three. It is called the Flying Mouse, from the extraordinary leaps it can take, owing to the peculiar provision with which it is furnished, and which helps to support it in the air. Like many other animals which pass their time in trees, it is provided with an extended skin along the flanks, which skin connects its four limbs together, and forms a kind of parachute that can be spread out like a kite when the creature is bounding from one branch to another. When at rest this expansive skin is hardly seen, and the little Opossum might be taken for an ordinary mouse.

The tail of this curious creature is remarkable for the

position of the hairs attached to it, which are arranged in a double row, like the bars of a feather. When leaping to a branch at a distance, or from one tree to another, the Opossum Mouse extends its parachute-like skin as widely as possible, and launches itself boldly into the air, and is able to guide, and even to alter, its course at will during its brief flight. It has, however, no power of rising in the air after it has once started; and hence all its leaps, or flights, must be towards a lower station than that from whence it springs. When the animal is at rest, the parachute closes up, and by its own elasticity gathers itself in folds.

The food of the Opossum Mouse is chiefly vegetable, consisting of leaves, buds, and fruit, which diet it is supposed to vary by preying also on insects.

THE WOMBAT.

THE Wombat, or Australian Badger (called by the natives of Australia the Womback), is a short-legged, thick-set animal, about three feet in length, and in figure and movement somewhat resembling a bear. But for its pouch, it might be ranked with the beaver and rat, as a rodent or gnawing animal; its teeth, as in those animals, continually growing as they are worn away. It is covered with a coarse hair of a sandy-brown colour, deepest in hue on the back, where the hair is thickest, and light-coloured and thin on the under parts. The head is large and flattish; the ears are pointed and erect; and the eyes, though small, are sharp and lively.

The Wombat is found in nearly all parts of Australia, and is to a certain extent prized for the sake of its flesh, which, however, is somewhat spoiled by the flavour of musk. It is not an active animal, but waddles and shuffles along with a kind of rolling motion, and it will often allow itself to be captured without showing any signs of ill-temper unless it is ill-

treated. Mr. Bass chased one of them, and lifting it off the ground, laid it on its back along his arm like a child. The Wombat made no resistance, but lay contented while being carried for upwards of a mile ; but when Mr. Bass began to tie its legs, feeling the pinching of the twine, the animal began kicking, scratching, and



biting furiously, making at the same time an angry whizzing noise, and only ceased such demonstrations of rage when their violence had exhausted its strength.

The Wombat is easily tamed, and then becomes fond of notice, seeking the caresses of those who treat it kindly ; like a pet spaniel, it will sleep on the knee or in the lap, and will beg on its hind legs to be taken up and nursed. When domesticated it feeds on almost any vegetable substance, and shows a remarkable partiality for milk.

In a wild state the Wombat of the mountains is said to be nocturnal in its habits, feeding only at night, and retiring during the day to burrows which it digs for itself to an extraordinary depth in the soil : on the other hand, the Wombat of the islands is seen to feed at all hours of the day. Its very deep burrowing is probably as much for the sake of warmth as for protection from enemies—the Wombat being extremely sensitive to cold. Its feet are broad, and furnished with strong claws, well fitted for digging in the ground ; there are five toes to each foot.

THE KOALA, OR AUSTRALIAN BEAR.

THE Koala is about as large as a dog of average size, and is covered with coarse fur of an ashy-brown colour, which is lighter in hue upon the tufts of the ears. It is not unlike a young bear in its motions and gait. Its generic name, *Phascolarctos*, signifying "pouched bear," has reference both to its ursine appearance and its marsupial structure. It is nocturnal in its habits, passing its life upon trees, or in the holes which it hollows under their roots. It is a native of the southern regions of Australia, and is said to be found nowhere else in a wild state. Like the other marsupial animals, the mother Koala carries her young in her pouch for a time, but when it is sufficiently grown she transfers it to her back, where it holds on with its hand-like paws.

The Koala is not an active animal ; though well fitted for climbing trees, it moves among the branches with the greatest deliberation and caution, as if doing so under the apprehension of falling. Its feet are not so well adapted for progress on the ground, on which it seems to crawl rather than to walk. Sometimes when foraging among the boughs it is seen to cling to the branches and to suspend itself from them in the same

manner as does the sloth, and on this account it has been called by some the Australian Sloth. Its food is said to be entirely vegetable, and to consist chiefly of young leaves, buds, and twigs ; in drinking it laps like a dog.

The Koala is of a gentle disposition, making very little resistance to those who attempt to capture it, and



never seeming to grieve at the loss of its liberty. Its usual voice is a low bark, but when much irritated and excited it screams shrilly, and exhibits every sign of passion.

The head of this animal is remarkable for the tufts of long hair which surround the ears. There is no hair on the muzzle, but its surface has a velvety feeling to the touch, which feeling extends along a patch of the skin leading from the nostrils some short space upwards.

THE PORCUPINE ANT-EATER, OR ECHIDNA.



THIS strange animal is about the size of the common hedgehog, and in those parts of Australia where it is found it has been named the Hedgehog by the settlers, on account of its back being covered with spines, and its habit of rolling itself up when alarmed. The spines are of a dirty white colour, but black at the points ; for a portion of the year these spines are half covered with a soft, silky chestnut-coloured hair, which at other seasons disappears altogether. There are no spines on the head, which is of great length ; and the jaws have no teeth.

The habits of the Echidna in its wild state are but little known. It is said to be the strongest quadruped in existence in proportion to its size. It digs for itself burrows in the earth, and when alarmed will do this with such astonishing rapidity as to appear to sink into soft ground almost by magic. Its food is ants and

other small insects, gathered into its mouth with the tongue, which it can protrude to a considerable length, and which is covered with some viscous substance.

Lieutenant Breton captured an Echidna in the Blue Mountains, and kept it for a considerable time; it died, however, on the voyage to England. He fed it with ant-eggs and milk so long as it remained in Australia, but on board ship it had to eat chopped egg, liver, and meat, and to drink water, of which it partook largely. In eating it used its tongue in two ways, sometimes darting it forth rapidly, and as rapidly withdrawing it; and at others curving it laterally, as a mower curves his scythe, and in a manner sweeping the food into its mouth.

The flesh of the Echidna is said to be of good flavour, resembling that of the sucking-pig. Armed as it is with formidable spines, and being able to burrow in the ground so rapidly, one would suppose it to be safe from the attacks of beasts of prey; it is known, however, that, spite of its hard and prickly armour, it sometimes falls a victim to that hungriest of all prowlers, the Tasmanian or Zebra Wolf.

The animal is now very rare in the colony of New South Wales, but is more common in the Blue Mountains, the environs of Port Jackson, and Van Diemen's Land.

BIRDS.

THE SECRETARY BIRD.



THE Secretary Bird (so called from the plumes which it carries on each side of its head, as clerks sometimes carry pens behind the ear) is a native of Southern Africa, where it is much valued for its services in

destroying snakes, which form a large proportion of its food. When full grown the Secretary is three feet in length ; it is almost wholly grey in colour, with a reddish-brown tinge on the wings ; the throat and breast approach to white ; the plumpy head-feathers are black, as is also the tail, with the exception of the two longest feathers, which are grey barred with black near the end, the extreme tip being white. The motions of this bird when young are most awkward and ungainly, but when full grown it marches in an easy and stately manner on its long strong legs with a sort of military air, but breaking at intervals into a run of a few paces, and then resuming its dignified stalk. In its battles with serpents it is seen to move with the utmost rapidity, and can indeed run with astonishing speed—so much so that the Arabs, from its great swiftness, have named it the “devil’s horse.” It is exceedingly cautious and wary, and will never suffer itself to be approached by the sportsman ; it has, however, few human enémies, its value as a snake-killer serving to protect it ; indeed, any one who should kill it in our colony at the Cape would incur the penalty of a fine.

In its combats with serpents the Secretary shows undaunted courage, attacking without hesitation even the deadly cobra, and invariably coming off the victor. The bird makes use of its wing as a shield, first receiving the stroke of the snake, then dashing it to the ground and trampling it under foot, while dealing frequent blows on the reptile’s head with its powerful beak. Sometimes it is seen to seize the snake by the neck, and then, soaring high in the air, to drop it upon the ground, which effectually finishes the strife. Besides serpents the Secretary devours reptiles of all kinds, insects, and other small animals. In the stomach of one of these birds were found eleven large lizards, as many small tortoises, a mass of insects, and three snakes.

The Secretaries live in pairs, and are not very often

seen by the traveller, nor do they ever congregate in flocks. They prefer to build their nests in high trees ; but when there are no such trees in their neighbourhood, they select the closest thickets that can be found. The eggs are two or three in number, white, and of a large size.

The services of this bird are so highly valued that attempts have been made to introduce the breed into other countries infested with poisonous serpents. The Secretary can be tamed, and is sometimes domesticated by the inhabitants of South Africa.

Some of these birds may be seen alive in the Garden of the Zoological Society, Regent's Park.

THE KESTREL.

THE Kestrel is the best known of the British hawks. It is a handsome bird, the male being about thirteen inches in length, with elegant plumage, varied with tints of grey and of reddish fawn colour, having spots of black on the back and wings, the under parts of the body being almost white. It builds its nest, which consists of a few sticks and tufts of moss, in the top of a high tree, or, in rocky districts, on the summit of a cliff ; but sometimes, instead of building, it will take possession of the deserted nest of a crow. The female lays three or four eggs, and the young birds are hatched about the beginning of summer. The female is larger than the male, and is of a darker and ruddier hue ; the young males are also darker, and do not complete their handsome plumage until they are a year old.

The Kestrel is well known to country people, who often see him high in the air, with his wings and tail outspread, apparently balanced without motion, and having his head turned towards the wind. He will

sometimes stay in this position for the hour together, on the look-out for prey. His food is almost anything that flies, or runs, or crawls, and which he is strong enough to master. He devours a great number of field-mice, and on this account he is useful to the farmer. On the other hand, he has been known, though very rarely, to devour the farm-wife's chickens, and to



destroy young game, and is specially destructive when he has a young family to rear. He also feeds on the larger kinds of insects, such as cockchafers and other winged beetles ; and he is sometimes seen hunting these late in the evening, catching them with his claws and eating them as he flies. Frogs, young moles, newts, caterpillars, and earth-worms also form part of his diet. On the sea-coast this bird is seen to come down to the

shore at low water and feed on the shrimps, small crabs, and other marine animals which have been left there by the tide. During the winter months the Kestrel haunts the neighbourhood of the farm-yard, where, when compelled by hunger, he sometimes pounces on the groups of sparrows and small birds whom the cold weather has driven to assemble there ; but more generally he feeds on the mice which at that season abound among the stacks of the homestead. Usually, the small birds do not seem to fear the Kestrel, or suffer themselves to be disturbed by his presence, though they will be off in all directions at the appearance of a sparrow-hawk or merlin. Swallows delight in teasing the Kestrel, and, knowing that they can outstrip him in flight, will surround and plague him if he makes his appearance among them.

Country people call the Kestrel the Windhover, from his habit of hovering so long, head to wind, over one spot ; it is supposed that each of these birds has its own regular beat, where it is not interfered with by others of its kind ; as there is scarcely a farm where its appearance is not familiar, and it may be observed hovering at the same point in the sky day after day for weeks together.

THE SPARROW HAWK.

THIS bold and handsome bird is much less common with us than it once was, owing to the numbers which have fallen victims to sportsmen and gamekeepers, who invariably shoot or otherwise destroy it when they can. It was formerly much valued and carefully trained by falconers, and in some parts of Europe it is still used for hunting quails and other birds. In pursuing its prey it does not swoop from a great height, like the

kite and the kestrel, but flies rapidly at no great distance from the ground, dashing at any small bird or quadruped that comes in its way. Its food consists of almost anything alive which it has strength to master—not merely the smaller birds, as larks, tits, and sparrows, but young hares, rabbits, partridges, and pheasants. When driven by hunger, it will resort to the farm-yard, and carry off the young fowls, and has



even been known to dash through the glass of a parlour window to make prize of a caged bird within. Occasionally the Sparrow Hawk will attack larger birds than itself, and one has been seen to fly at an eagle, as if to provoke him to combat. On the other hand, this scourge of the smaller birds is sometimes mobbed by a crowd of swallows, sand-martins, and

others of the fast-flying tribes, who gather around him a little above his line of flight, chattering and screaming as if to revile and hoot him from their neighbourhood.

The male Sparrow Hawk is about twelve inches in length—the female being much larger, and measuring fifteen or sixteen inches. The female is much bolder than the male, and will attack creatures of a larger size. The general colour of the male is dark brown on the upper surface of the body and head, which colour turns to grey as the bird grows old ; and reddish-white on the under surface, which is marked with narrow bands of darker hue ; the legs and toes are yellow, the claws black, and the beak a bluish slate-colour deepened to black at the point. The female is not so richly coloured as the male bird, the upper surface of her body and head being covered with numerous small white spots. The principal wing feathers are of light brown with dark bars ; the under surface is grey-white and also barred transversely.

The Sparrow Hawk is found throughout Great Britain and Ireland, and in most parts of the old world. The female builds her nest in a high tree, or in some cliff—often appropriating the deserted nest of a crow. Her eggs are four or five in number, of a bluish white splashed with brown. She takes great care of her young, which are exceedingly voracious : she and her mate supply them with the warm bodies of small birds, at the rate of twenty or more in a day.

THE COQUIMBO, OR BURROWING OWL.

THIS curious undersized owl, remarkable for its long legs, is an inhabitant of several parts of America, and is found in the same localities as the species of marmot called the prairie dog, for which it is sometimes

mistaken as it is seen sitting on the little piles of earth cast forth at the sides of the burrows. It has been suspected of feeding upon the young of the prairie dogs, and of domiciling among them for that especial purpose ; but it has been shown upon investigation that such is not the case—the bird feeding principally upon beetles, and various large insects with which such localities abound ; though it has been ascer-



tained that the Coquimbo Owls inhabiting the broad prairies of Buenos Ayres eat mice, small sea-shore crabs, and reptiles of different kinds. One reason why the Coquimbo Owls consort with the prairie dogs may probably be found in the fact that it is their habit to take possession of the burrows dug by those little animals rather than to dig them for themselves : the rattlesnakes do the same, doubtless because they find

the warmth of the dog's burrow agreeable ; but these poisonous intruders are not so willingly tolerated as the owls, and are often attacked and destroyed by the rightful owners of the burrows, who yet live in perfect harmony with the birds. The burrow which the Coquimbo Owl makes for itself is never so neatly dug nor nearly so deep in the ground as that of the prairie dog ; in fact, it rarely exceeds some twenty inches in depth ; at the bottom is placed the nest, consisting of dried grass, leaves, moss, and some softer materials for the reception of the eggs, the shells of which are white.

The Coquimbo Owl is about eleven inches in length : the colour of the upper part of the body is a rich brown, darker on the outer surface of the wings, and dappled with small grey spots, the under parts being of a greyish white. The bird is not nocturnal in its habits, but is seen abroad in the middle of the day, usually near the entrance of its burrow. It is active in its motions, taking to flight when disturbed, and never flying far, but alighting after a few turns, and attentively watching its pursuer. Sometimes, when suddenly alarmed, it will disappear in the nearest burrow—and hence it has happened before now that a Coquimbo Owl, a prairie dog, and a rattlesnake have all three been unearthed from the same retreat.

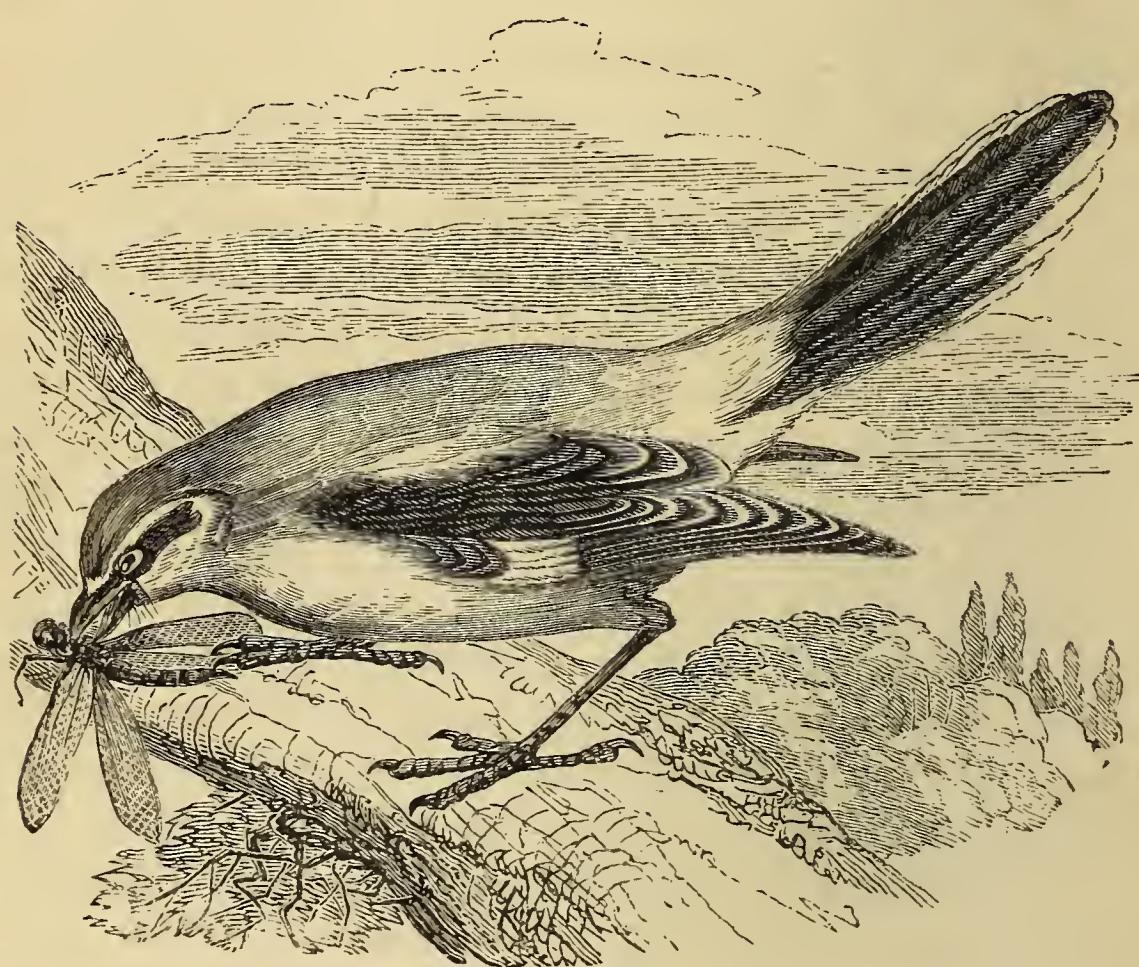
Unlike other owls, the Coquimbo neither hoots nor screams, but utters a cry which resembles the quick bark of the prairie dog more than anything else.

THE GREAT GREY SHRIKE.

THE Shrikes, or Butcher Birds, so called from their habit of tearing and lacerating their prey, are well known for their savage character, being as rapacious

as hawks, and even more destructive in proportion to their size.

The Great Grey Shrike is but an occasional visitor to this country, where it is sometimes seen in the winter ; but it is common in many parts of Europe, preferring the warmer southern regions. It is about ten inches in length. Its colour is a bright ash grey on the upper part of the body, and white on the chin, breast, and



under parts ; a broad black band crosses the forehead and runs beneath the eyes ; the wings are black, broken up with touches of white ; and the quill-feathers of the tail are black, varied and tipped with white.

Like the other members of the same family, this bird carries off its prey with the beak, and not, as hawks do, with the claws. Its food is the young of other birds, mice, frogs, lizards, and other small animals, which it first destroys by a bite across the head, and then not

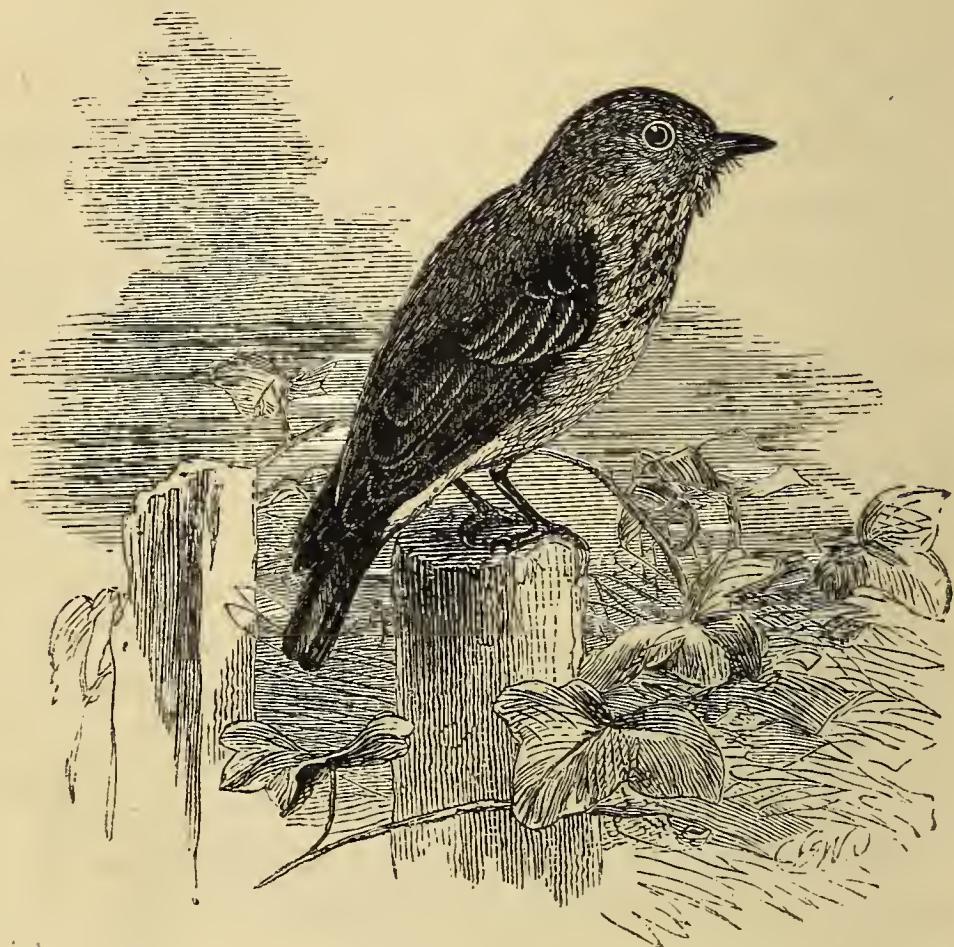
unfrequently hangs them in some convenient position in the fork of a branch, or impales them on a thorn, before proceeding to eat them. It feeds also on beetles and large insects, impaling them at times in like manner. The reason of this custom is not at all clear ; but the Shrike is observed to follow it even in confinement, when it has the opportunity of doing so.

Though a strong and ravenous bird, the Grey Shrike has a mortal terror of the hawk, and has the power of descrying it at an immense distance ; when it sees one approaching, it sets up a shriek, which is sure to be responded to by all the Shrikes within hearing. The continental fowlers, when they lay their nets for falcons, take advantage of the Grey Shrike's timidity and powers of sight ; they place him in a cage near their lures, and they know, by his screams of terror, when the falcon is approaching, and take their measures accordingly. This service which he renders to the fowler has obtained for this bird the name of *excubitor*, or watchman.

The note of the Grey Shrike is a harsh cry, not unlike that of the kestrel ; but it has, further, the remarkable faculty of imitating the songs of other birds, which faculty it is supposed to use as a means of beguiling their young into its power. Its flight is peculiar, resembling that of the wagtail ; and in flying from one lofty perch to another, it droops and rises again, describing the curvature of a slack-rope.

The nest of the Grey Shrike is usually situated deep in the forest, on the highest branch of some lofty tree ; it is composed of fine grass, roots, moss, down, and wool. The eggs are from four to six in number, of a bluish grey colour, variously mottled, and spotted at the larger end with light brown and deep grey.

THE SPOTTED FLYCATCHER.



THE common Flycatcher is familiar to most persons living in the country, being found during the summer months in our gardens, paddocks, shrubberies, and orchards. It is a small bird, less bulky than the sparrow, and measuring scarcely six inches in length. Its plumage is ashy-brown on the upper parts, and white on the under parts, the sides and flanks deepening into a yellowish brown: there are a few dark spots on the top of the head.

These active little birds make their appearance here about the middle or end of May, by which time the insects, which are supposed to be their sole food, are beginning to be abundant. The Flycatchers, like the swallows, have the habit of returning to the same spot year after year, and have even been known to continue their annual visits to the same place for twenty years together, pro-

bably through several generations of birds. They almost invariably prefer the neighbourhood of human dwellings, building their nests in the oddest places, such as holes in walls, the angles of beams or rafters, or in the shelter of some leafy creeper trained against the house, from which habit the Flycatcher has obtained the names of Beam-bird and Wall-bird. The nest is neatly made, of moss, straw, and hair, lined with feathers, and is begun and finished in less than a single day. If not disturbed, the parent birds show remarkable confidence in man, and will submit to have their proceedings watched without taking offence.

The Flycatcher's mode of feeding is peculiar. Taking his stand upon some garden pole, railing, or branch, at a low elevation, he is seen looking out for something, his rapid glances darting from side to side. Suddenly he shoots from his perch, describes a short circle in the air, and returns to it again; this he will often do several times in a minute, and every time catches his fly—keeping up the chase until his appetite is satisfied. The Flycatcher has no song, only a low gentle twittering. When the young are hatched, both parents have to follow the chase all day long, the hungry brood requiring constant nourishment. A pair of Flycatchers which were watched at this anxious season, brought food to their young five hundred and thirty-seven times in the course of one day, beginning their labours at about half-past three in the morning, and continuing them until nearly nine at night. The food of the Flycatcher is almost, if not entirely, composed of insects, and consists principally of flies of various kinds. It is not known to touch caterpillars, nor, though often seen in fruit-trees, does it injure the fruit—frequenting them rather for the sake of the insects which it finds among the branches.

The eggs of the Flycatcher, four or five in number, are of a pale bluish white mottled with ruddy spots, deeper in hue towards the larger end. The young are hatched

in the second week in June, and remain with the parents longer than most birds. It is but rarely that a second brood is reared in the course of the season, the birds taking their departure in September for the south of Europe or the shores of Africa.

THE DIPPER.

THIS singular bird resembles the Wren in shape, but is much larger, measuring when full grown about seven inches. Its colour is a dark brown on the upper parts, pure white on the throat and breast, and brownish-red beneath. The colours of the female are not so bright as those of the male. Though not often seen by the casual observer, the Dipper is more common than is generally supposed ; its home is on the margin of streams, in the neighbourhood of rapids, weirs, and cascades, where it is often seen by anglers and tourists. Though its legs are short, and its feet are not webbed, it yet wades and swims, and dives, and often remains so long under water as to baffle the scrutiny or exhaust the patience of an observer watching to see it emerge. How it proceeds from place to place under water is not accurately known. It has been asserted that the Dipper has the power of walking on the bottom of a river or pool as other birds do on dry ground, and that it does so in search of food, examining the stones, and picking up the small molluscs and larvæ of insects, which appear to form its principal diet. As the body of the Dipper is lighter than the water, it is not easy to imagine how it can walk on the bottom in the manner above described. It is more probable, as other observers have supposed, that the wings are its sole means of locomotion under water, and that it can keep a position at any depth it chooses, by beating the water upwards with the requi-

site force. The Dipper has been accused by salmon fishers of injuring the fisheries by feeding on the spawn of the trout and salmon, and in Scotland it is shot by gamekeepers on this account. That it feeds on fish, whether or not it also devours their spawn, has been sufficiently proved by the discovery of fish-bones and undigested parts of fish in the stomachs of several which have been dissected.



The flight of the Dipper is remarkably rapid, and is not unlike that of the kingfisher, though it generally flies lower and keeps nearer to the bank of the stream. Its song is lively and pleasant, and low-toned like that of the thrush heard at a distance; and from this peculiarity of song it has earned the names of the Water-thrush and the Water-ouzel, by which it is known in

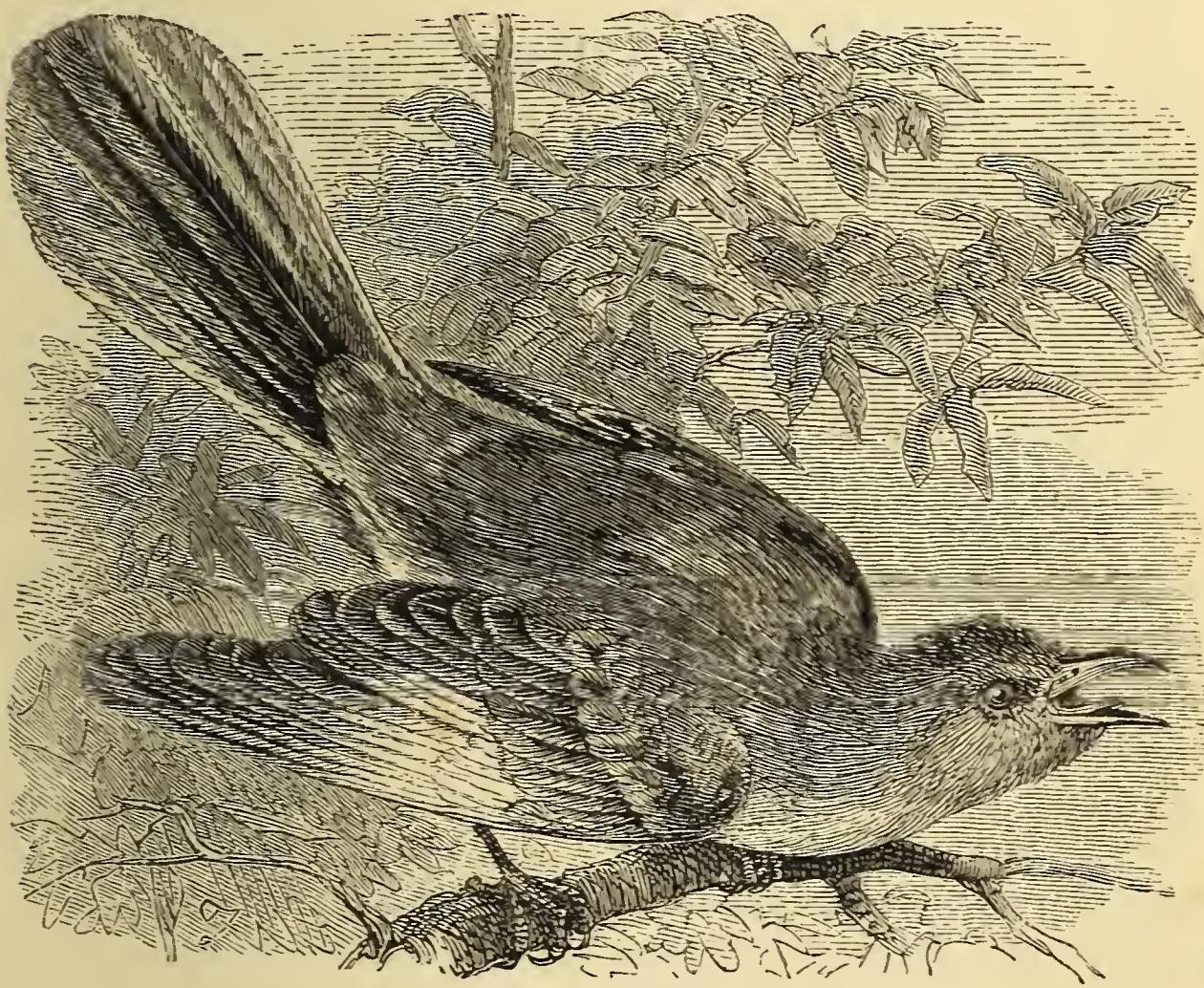
some localities. It has a habit of standing upon a stone to sing, performing at the same time the strangest antics—hopping, jerking its body, and twisting its head in all directions. The nest of the Dipper resembles in form that of the wren ; it is built of moss in a manner felted together so as to be impervious to water, and as the moss is always green, the nest is not easily discovered. The usual situation of the nest is under the bank where it overhangs the stream, or in some other convenient spot where, in case of alarm, both old and young birds can plunge at once into the water. Sometimes, when the waters of a rivulet shoot out in a curve, the Dipper's nest will be found between the water and the bank, so that the birds have to fly through the descending water to get to their home. The nest is covered in at the top, and can only be entered by a small hole ; it varies greatly in size according to the situation in which it is placed. The hen lays four or five eggs of a pure white. The young birds have a variegated plumage of black, grey, brown, and white, and they may often be seen sporting in company with their parents, with whom they remain for a considerable period.

THE MOCKING-BIRD.

THE Mocking-bird is a native of America, and is universally acknowledged as the most accomplished of all singing birds. It is about nine inches in length, and its general colour is a dull brown with an ashen tinge. The quill feathers of the wings are deep brown towards their extremities, and white towards their base. In the male bird the white portion of the wings is purer than in the female, and the back is of a deeper colour. The central tail-feathers are dark brown, the

outer ones white. The under portion of the body, with the throat and chin, are a pale greyish brown.

The song of the Mocking-bird is the source of admiration and astonishment to all who hear it, and all the powers of language seem to have been exhausted in the endeavour to describe it. The native notes of the bird are full, bold, and free, and are unequalled in variety, consisting of short phrases, constantly changing and



uttered with great power and rapidity for half an hour or an hour together. But its most surprising efforts are displayed in the countless imitations it delights in giving of the songs of other birds, and of the sounds, however varied, be they exquisitely harmonious or disagreeably dissonant, which it is in the habit of hearing. Thus it reproduces the songs of the blue-bird, the thrush, the wren, the yellow-throat, the oriole, the red-bird—indeed of all the sweet songsters of the American forest. It

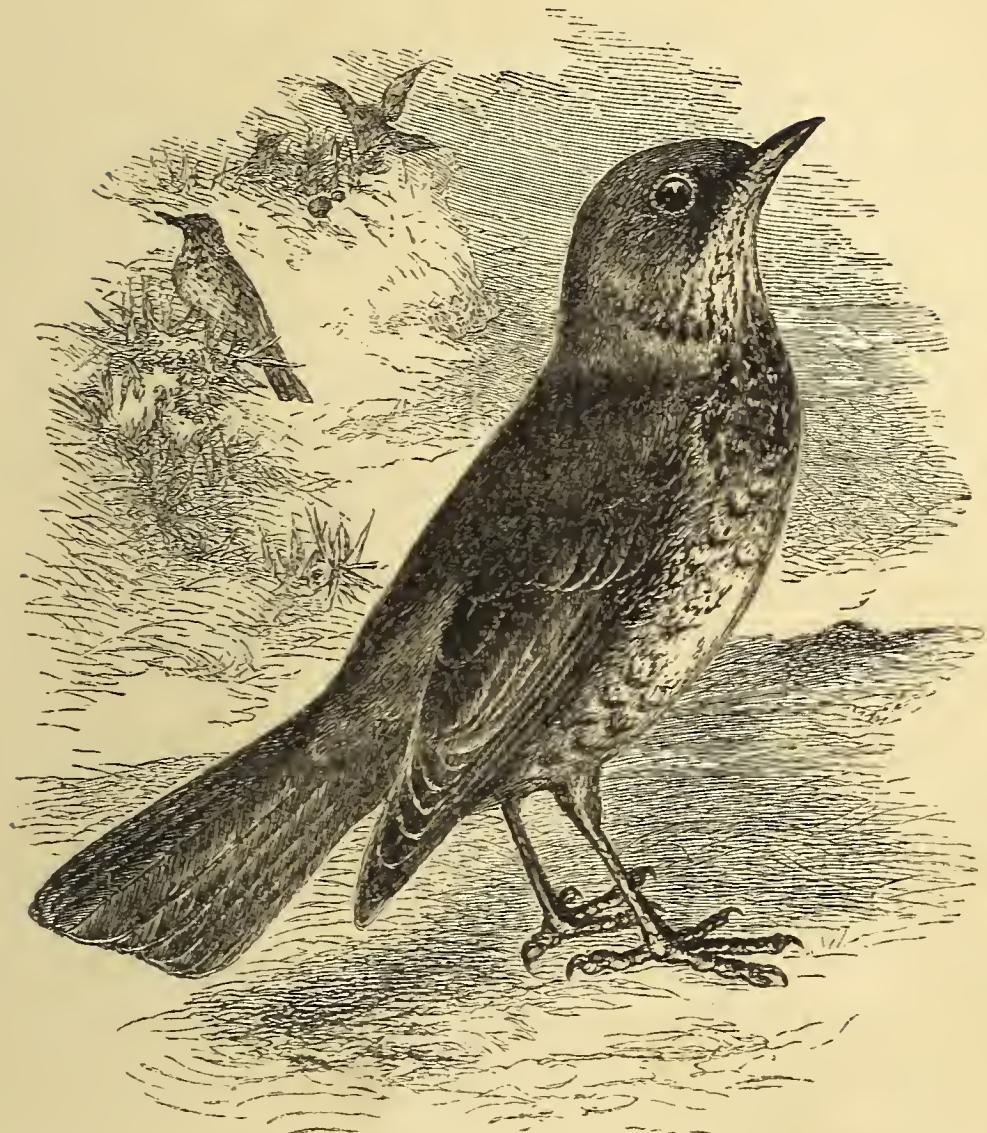
mocks the plaint of the whip-poor-will, the chattering of the jay, the clatter of the king-bird, the coo of the dove, the screech of the owl, the scream of the carrion-crow. Nor is this all : in the neighbourhood of the dwellings of man it takes up and re-echoes the sounds of human industry and association, imitating to perfection the hum and buzz of the mill, the blows of mallets and axes, the creaking of wheels, the splitting and rending of timber, the neighing of horses, the baying of dogs, the baa of sheep, or the low of oxen, and a multitude of other sounds familiar in the haunts of men—not omitting the snatches of tunes which labourers whistle as they work.

It is no wonder, looking to his varied accomplishments, that the Mocking-bird is highly prized, or that a good specimen, when tamed and inured to confinement, should be sold, as it sometimes is, for five-and-twenty pounds. Occasionally they have been brought to this country, without apparently suffering from the change of climate.

The Mocking-bird builds its nest generally in some bush at about eight or ten feet from the ground. The nest is composed of twigs, dried weeds and leaves, straw, hay, wool, and moss, and is lined with fine vegetable fibres. The eggs are four or five in number, and are of a greenish blue with brown spots ; two broods are often reared in a year. During the period of incubation the parent birds are most courageous defenders of the nest, suffering no enemy to approach it. The black snake is their worst foe : this reptile climbs to the nest to prey on the callow young ; but the parent birds are usually more than a match for it, and, unless the nest is surprised in their absence, generally kill it by fierce and rapid blows from their beaks.

It is not easy to rear young Mocking-birds when they are taken from the nest, as they require unremitting care and attention ; but those which are caught wild in the woods are readily tamed.

THE FIELDFARE.



THE Fieldfare is generally among the first small game shot by the rustic sportsman. It is scarcely as large as the missel thrush, and measures about ten inches in length. The head, neck, and lower parts of the back are a deep ash colour ; the upper part of the back and the wing-coverts are a chestnut brown ; there is a white rim above the eyes, and the space between the eyes and the beak is black ; the throat and breast are yellowish red with dark spots ; the feathers on the flanks are spotted with black and edged with white ; the under parts are pure white, as are also the under wing-coverts.

The Fieldfare is a migratory bird, spending its sum-

mer in the north of Europe, and visiting us in October or November, and staying here till April or May, rarely as late as June. They come hither in flocks, and flock together during the whole of their stay, though stray birds are not at all uncommon. They also live in societies in the countries in which they breed, building their nests in communities of a hundred or two together. The nest is not unlike that of the ring-ouzel ; the outside is formed of sticks, and coarse grass and weeds, matted together with clay, and lined with a thick bed of fine dry grass. The eggs are four to six in number, of a light blue colour, mottled with spots of dark red brown.

The habits of this bird are shy, and it is not easily approached in warm or temperate weather ; but it is much cowed by extreme cold, and in times of severe frost, when it cannot pierce the hard ground for worms or insects, but has to feed on the haws and berries of the hedge, it is much less wild, and falls a frequent prey to the youthful gunner.

There seem to be doubts whether the Fieldfare has any true song. Mr. Yarrel describes its note as "soft and melodious ;" and an anonymous writer says, "It combines the melodious whistle of the blackbird with the powerful voice of the missel thrush ;" while Bechstein says it is "a mere harsh disagreeable warble." Its call note is undeniably harsh, and has obtained for it in the French provinces the name of *Tchatcha*. In this country, at least, it is rarely heard to utter any other sound. Mr. Hewitson, who visited Norway chiefly for the purpose of observing the habits of this bird and the red-wing, had his attention aroused by the harsh cries of several birds which were at first supposed to be shrikes, but which proved to be Fieldfares watching over their new-made dwellings. He found them herding in societies, their nests grouped together at various heights from the ground, from four feet to forty, the new nests mingling with those of the preceding year,

and for the most part placed against the trunk of the spruce fir.

In Norway the Fieldfare is more plentiful than any other bird. Flocks of them invariably migrate to this country in autumn; but if the winter sets in unusually cold, they are known to fly off further to the south, returning to our shores after the severe weather is past, and remaining here throughout the spring.

THE BLACKBIRD.

THERE are few of our native song-birds better known than the Blackbird. He derives his name from the colour of his plumage, which, with the exception of the under surface of the wings, which is greyish, is of one uniform black. He is prized for the fullness and mellowness of his song, some of the notes bearing no slight resemblance to those of a flageolet, but being much richer in quality. He is more a favourite, however, with the country people, who admire his "native wood-notes wild," and shut him up in a wicker-cage, that they may enjoy them, than he is with the regular bird-fanciers who find his song too rude, and mingled occasionally with notes the reverse of musical. The Blackbird is, notwithstanding, susceptible of training to a high degree, and has been known to pipe short melodies in perfect tune; but it is not easy to teach him an entire tune, and success in the endeavour to do so is said to be rare indeed. In his wild state he usually sings in the day-time, but is yet often heard at night in the spring of the year. The food of Blackbirds consists of insects, worms, and fruit; and, perhaps, it is because all these are found abundantly in the garden that they are in the habit of building their nests in or near to gardens. When the gooseberries are ripe, they make remarkably free with

them, and seem to know well where to find the ripest and sweetest flavoured, and they pay as assiduous court to the cherries and the wall-fruit: as at the same time they devour a vast quantity of insects and larvæ, it is likely that they benefit the garden quite as much as they injure it; so that he who tolerates them and allows them to live in peace, gets their agreeable music free of cost.



Among the worst foes of the Blackbird are the juvenile sportsmen, who generally learn the art of gunnery much at his expense. It is not, however, easy to come within shot of him, as he has a knack of plunging over hedges and fences with amazing rapidity, and turning up again in the place where he would be least expected. He would escape the young gunner oftener than he does, were it not for his habit of betraying his whereabouts by a short chaffering kind of call.

The Blackbird builds very early in the spring. The

nest is generally made in some dense bush, and is formed of grass, sticks, and rooty fibres, lined with soft mud which dries to the shape of a circular cup. The eggs, to the number of five, are laid upon a soft lining of fine grass, and they are most frequently of greyish blue colour, thickly freckled with brown of different shades. The mother bird is most courageous in defending her young, and, having built in a garden, is often known to fight off the house-cat with the help of her mate, and drive him from her nest.

The female Blackbird is not so dark in hue as the male, the whole of her plumage being rather brown than black, and approaching to yellow about the throat. Now and then specimens of both sexes are found which are quite white, and others again which are pied : in some parts of France these singular specimens are said to be frequently met with.

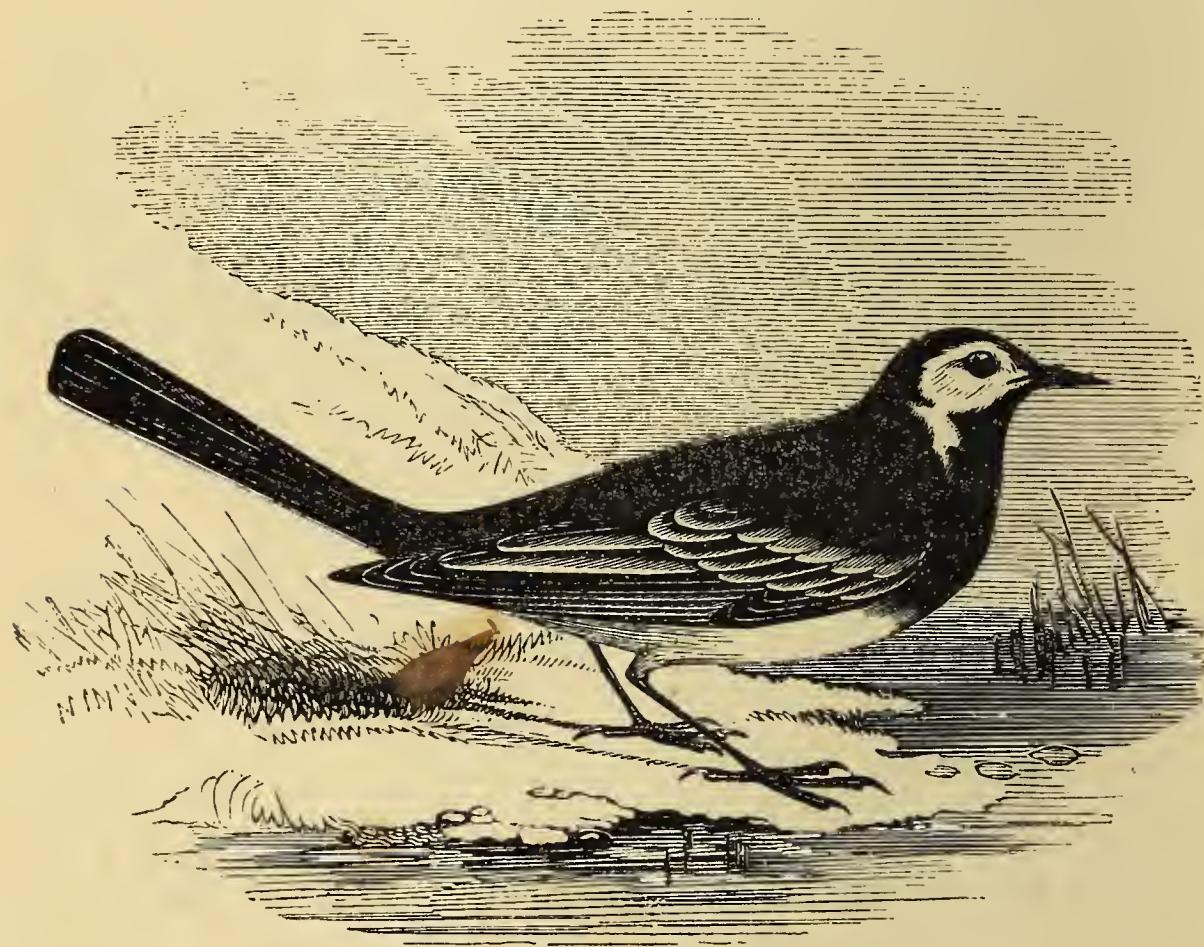
The length of the full-grown Blackbird is about ten inches.

THE PIED WAGTAIL.

THE Pied Wagtail, popularly known as the Dish-washer and the Water-wagtail, is a favourite bird with country people and boy sportsmen. It is usually met with on the banks of ponds, streams, and water-courses, in willow-grounds, or osier-beds, or on the borders of marshes and bogs. It runs about without hopping or jumping, its tail wagging up and down with every motion ; and it is seen to rise at intervals for short flights, probably after some insect. Though fond of the neighbourhood of the water, it is often seen on lawns and in meadows, feeding in the short grass ; and frequently it follows the ploughman, foraging along with the rooks amid the upturned soil ; or it ventures into the farm-yard, and picks up stray provender under

the legs of the cattle. It is said to be an accomplished fisher, and to feast upon the smaller fry ; and, looking to its fondness for streams where fish abound, this is likely to be the case.

The Pied Wagtail is a remarkably handsome and gracefully formed bird, and cuts a striking figure among the smaller birds with which it is often seen. Its length is about seven inches ; its plumage is a mixture



of white and black arranged in a bold effective manner, the dark portions contrasting vividly with the pure white. In winter the plumage is much whiter than in summer.

This well-known bird remains with us during the whole year, being much more common in some parts of the country than in others. In the cold weather it retires towards the southern coasts, or to those parts of the island where the streams are never completely frozen ;

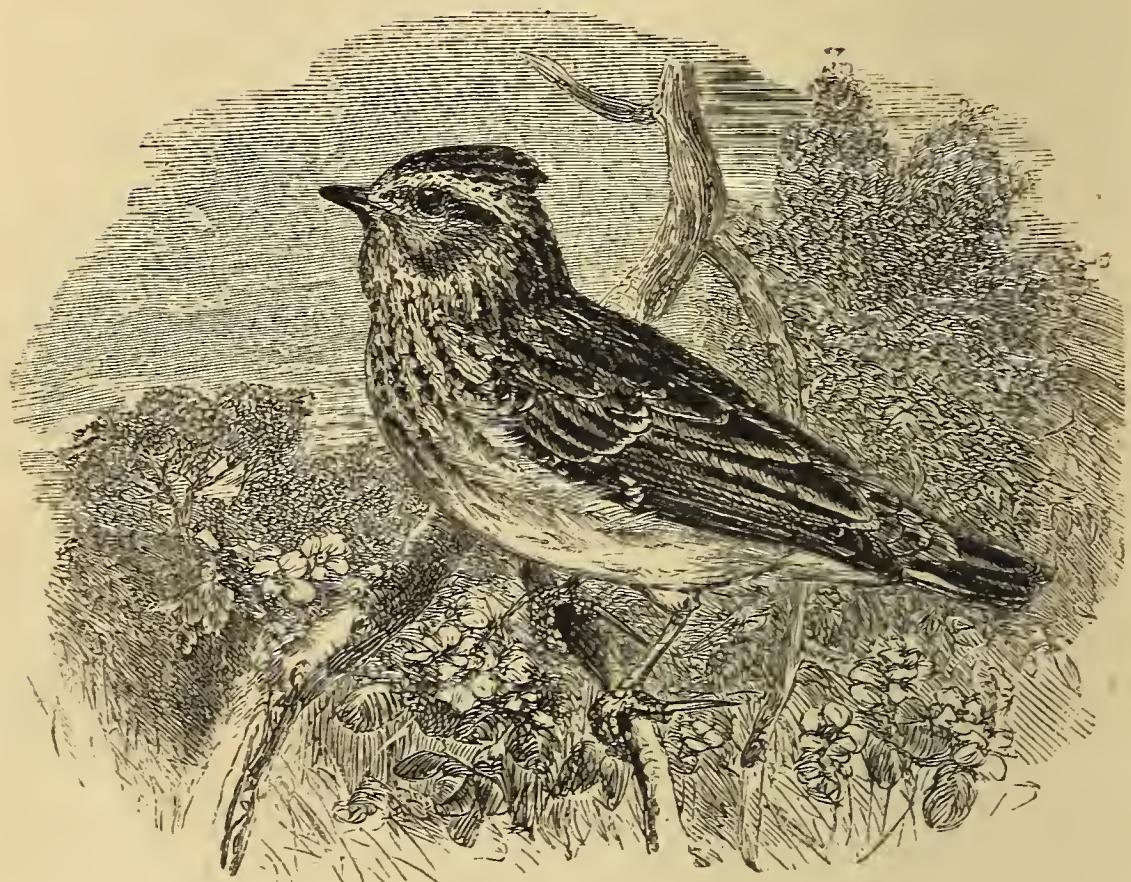
or else it resorts to the seaside, where it can feed on the small marine animals left at the reflux of the tide.

These birds are very sociable in their habits, and will congregate in parties, sometimes even in considerable flocks. When one of them is wounded by a shot from a gun, another is often seen to hasten to it, as if to render assistance. The French fowlers take advantage of this kindly sympathy, by compelling captive Wagtails to struggle in their toils, and by their cries to attract others towards them, who, coming within the enclosure of the nets, are caught in their turn. In France, where almost every small bird is killed for food, the flesh of the Wagtail is accounted a delicacy.

The Wagtail builds about the middle of April, and is exceedingly cautious in selecting the locality of its nest, which is usually at no great distance from the water, but is never open to the observation of the casual passer-by. Sometimes it is placed in the crevice of a rock, or niche of a quarry or gravel-pit ; sometimes in the hollow of a tree, or a hole in a wall, or in some interstice between stones lying in a heap on the ground ; and ere now it has been found in the recesses of a faggot-pile ; but in all cases it is situated far out of sight, and is rarely discovered by birds'-nesting boys. The nest is composed of grass, leaves, and moss, lined with wool, hair, and feathers, and is a snug and comfortable home for the young. The eggs are a grey white, speckled with brown, and are four or five in number.

The song of the Wagtail is low and of short continuance, but the notes are sweet and pleasing.

THE WOODLARK.



THE Woodlark in form and colour very much resembles the skylark, but is distinguished from that by its smaller dimensions. It is little more than six inches in length ; its upper parts are reddish-brown, the colour being darkest at the centre of each feather : a yellowish white streak runs above the eye to the back part of the head ; and the under parts are a pale yellowish brown, flecked on the breast with dark brown. Unlike the skylark it can perch upon trees, and sometimes sings a sweet low song on the lower branches long after the sun has set. It is not often met with in the open fields and downs, but prefers the neighbourhood of woods and plantations.

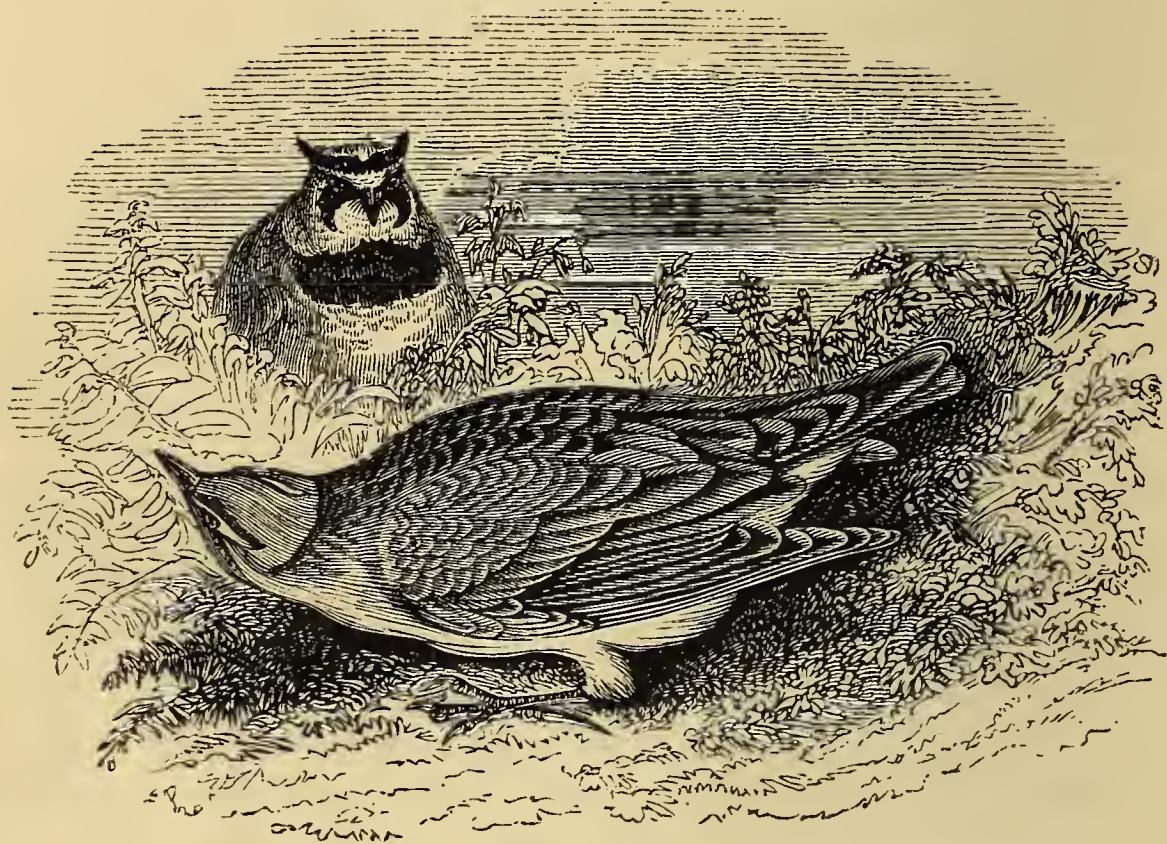
The song of the Woodlark is remarkably fluent and melodious, though not very powerful, and it is thought by many persons to rival in sweetness that of the night-

ingale ; on this account the bird is much prized by dealers in singing-birds. It sings for a longer period than most of our native songsters ; beginning to be heard in March, and not ceasing entirely until the cold weather sets in with frost. Like the skylark, it often soars to a great height, singing as it rises, its song increasing in power the higher it goes, and growing fainter as it descends. The upward flights of the bird are a series of circles, which are said to be described over the place of its nest. In summer time, especially after a shower, the Woodlark is often heard singing from the top of some high tree ; the liquid sounds of its notes are supposed to resemble the syllables "*lu-lu*," which is the name the French have given to the bird.

Woodlarks are far less common than skylarks, but are found in considerable numbers in certain localities. In the autumn they assemble in small parties, which may be seen foraging together on the skirts of open downs and commons ; and it is at this period that many of them are captured by the snares of the fowlers. These flocks are never very large, rarely consisting of more than ten or a dozen birds. These societies are broken up early in the spring, the birds pairing off towards the end of March.

The Woodlark's nest is placed on the ground, and is composed of bents and moss, lined with fine grass, and is generally well concealed from observation. The eggs, four or five in number, are of greyish white, speckled and sometimes faintly streaked with brown. The nest is begun in March, and the first brood is hatched in May. It is probable that several broods of young are raised in the course of the year, as Woodlarks have been found sitting as late as September.

THE SHORE LARK.



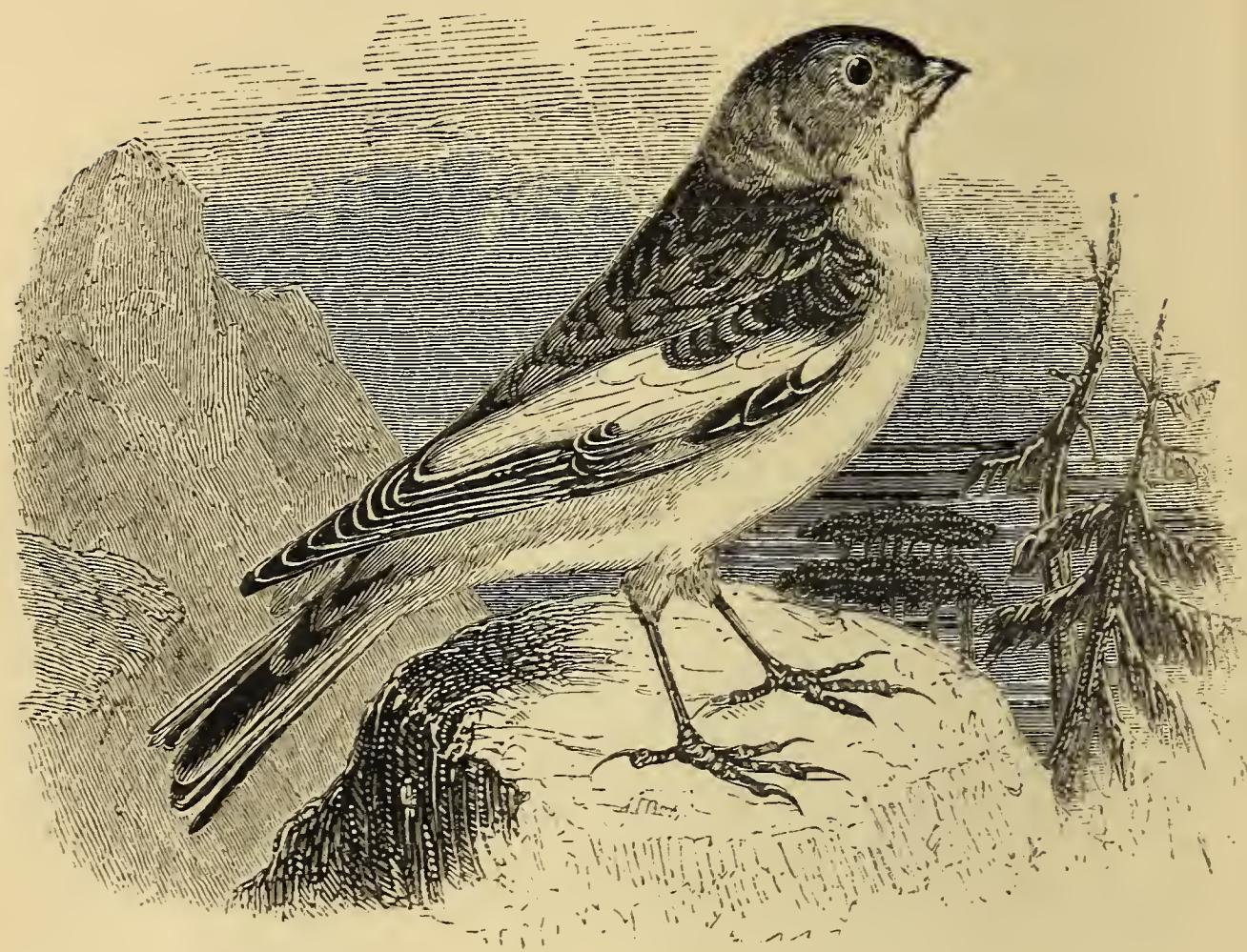
THE Shore Lark is one of a singular genus of larks, called Eared Larks, on account of a double tuft of feathers which project backwards from near the top of the head in a way that reminds one of a pen held behind the ear of a clerk. It is about seven inches in length; the upper parts are reddish brown, the breast and flanks yellowish white, and the abdomen white; the throat and forehead are yellow; the lore and gorget black, and there is a black band over the forehead. The Shore Lark builds its nest on the ground, and, like the rest of the lark family, it sings as it rises on the wing and soars aloft. It is sometimes, but not often, seen in this country, a few only having been occasionally recognised on the Norfolk coast. It is abundant in North America during the colder months

of the year. Wilson describes it as one of the American winter birds of passage, "arriving from the north in the fall, usually staying with us the whole winter, frequenting sandy plains and open downs." It is numerous in the Southern States as far as Georgia so long as the cold weather lasts. "They fly high in loose scattered flocks, and at these times have a singular cry, almost exactly like the skylark of Great Britain. They are very numerous in many tracts of New Jersey, and are frequently brought to Philadelphia market. They are generally very fat, and are considered excellent eating. Their food seems to consist principally of small round compressed seeds, buckwheat, oats, &c., with a large proportion of gravel. On the flat commons within the boundaries of the city of Philadelphia, flocks of them are regularly seen during the whole winter. In the stomachs of them I have found, in numerous instances, quantities of the eggs or larvæ of certain insects, mixed with a kind of slimy earth. About the middle of March they generally disappear, on their route to the north."

According to Forster, the Shore Larks visit the neighbourhood of Albany, first at the beginning of May, but do not breed while there. Their food at this season is said to be the buds of the spring birch and the seeds of grass, in search of which latter they skim along close to the ground, and are at times seen running about and foraging in small holes in the earth.

The projecting pencil feathers on the Shore Lark's head are moveable at its will, and often by their motion give to the bird a strange and odd appearance; in dead birds these feathers lie so closely among the others that they can scarcely be distinguished from them.

THE SNOW BUNTING.



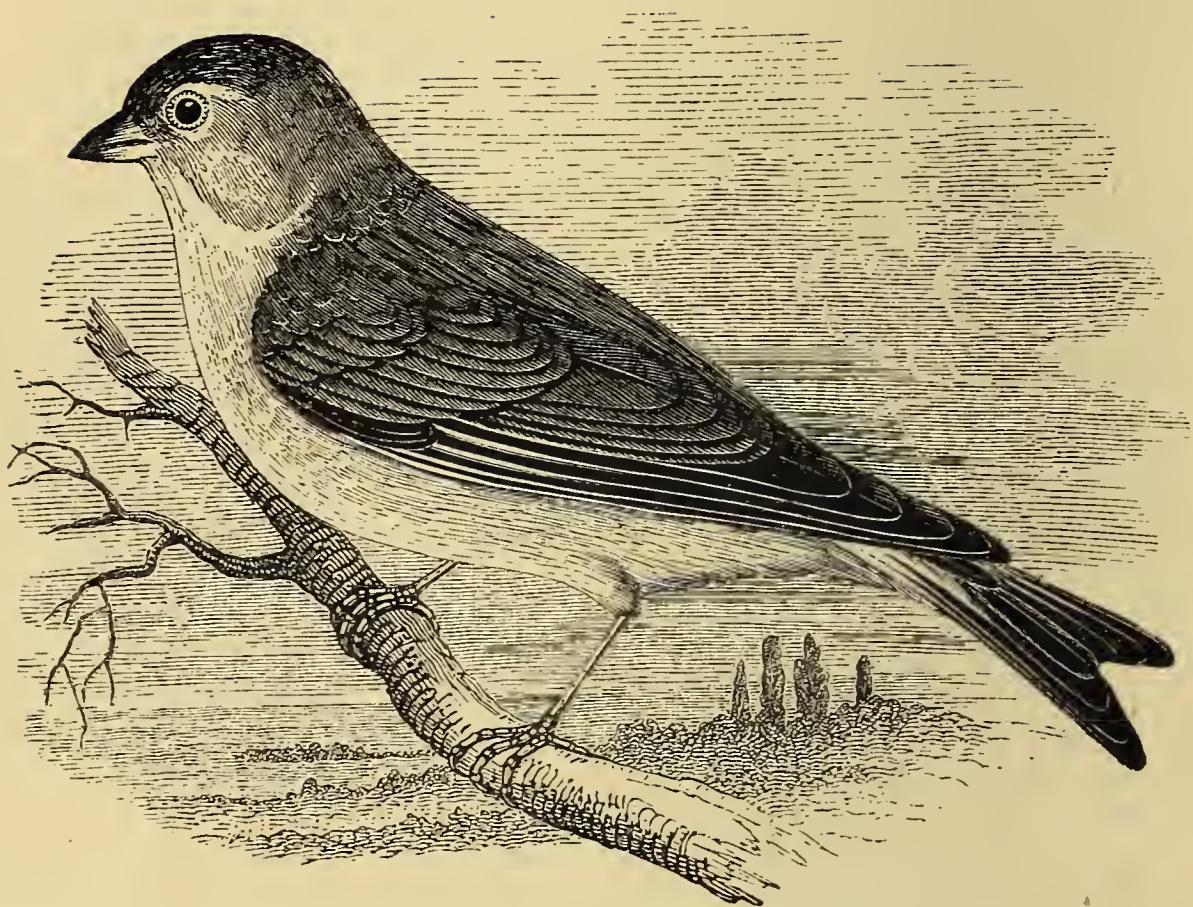
THE Snow Bunting is an inhabitant of the cold regions of the north, visiting these islands during the autumn and winter. According to Macgillivray, who supposes that it sometimes breeds on the Grampian range (a specimen having been seen there as early as the 4th of August), the migratory flocks make their appearance on the higher grounds of the south of Scotland about the end of October, and about the same period, though in smaller numbers, in the south of England. "Assembled in large straggling flocks, or scattered in small detachments, these birds may be seen flying rather low along the shore, somewhat in the manner of larks, moving in an undulating line by means of repeated flappings and short intervals of cessation, and uttering a soft and rather low cry, consisting of a few mellow notes, not unlike those of the common linnet, but intermixed at

times with a sort of stifled scream or churr. When they have found a fitting place, they wheel suddenly round and alight rather abruptly, on which occasion the white of the wings and tail becomes very conspicuous. They run with great celerity along the sand, not by hops, like the sparrows and finches, but in a manner resembling that of larks and pipits ; and when thus occupied it is not in general difficult to approach them, so that specimens are easily procured. At intervals they make excursions into the neighbouring fields, alight in corn-yards, at barn-doors, or even on the roads, where they obtain the seeds of wheat, oats, and weeds. In the villages along the coast of Lothian they are sometimes, in spring, nearly as common as sparrows, and almost as familiar. About the middle of April, or sometimes a week later, these birds disappear and betake themselves to their summer residence." Sometimes, in severe weather, the Snow Buntings are seen flocking with larks, and from this habit they have obtained the popular name of "White-winged Larks."

The colour of the Snow Bunting varies greatly, according to the season. In winter the back and part of the wings is a black-brown, the rest of the body being a pure snow-white. In summer the under plumage is a tawny brown spotted with white, and the back black spotted with brown. The quill-feathers of wings and tail are black, varied with bay and white. The length of the bird is nearly seven inches.

The Snow Bunting builds its nest of grass and feathers, lining it with the soft downy fur of the hare, fox, or other animals ; it prefers for its home a lonely spot in some mountainous district or rocky *séclusion*, at a distance even from its own species. The eggs are white spotted with brown and pale red, and are five in number. In many countries these birds are valued for food, their flesh being considered a delicacy. The Greenlanders catch them in great numbers, and preserve them by drying.

THE LINNET.



THE common Linnet is a well-known bird, and is deservedly a favourite on account of the remarkable sweetness of its song, which, however, is neither powerful nor long sustained. The male bird is about five and a half inches in length, and the female is nearly half an inch shorter. The plumage of the male in summer may be thus described: the feathers on the crown of the head are greyish brown tipped with crimson; the face and back of the neck are an ashen-grey brown; the upper parts of the body are of chestnut colour, and the wings are black, save the narrow outer webs, which are white. The beak is a bluish lead colour; the chin and throat are grey; the breast is a lively red, delicately spotted with brown, and fading to

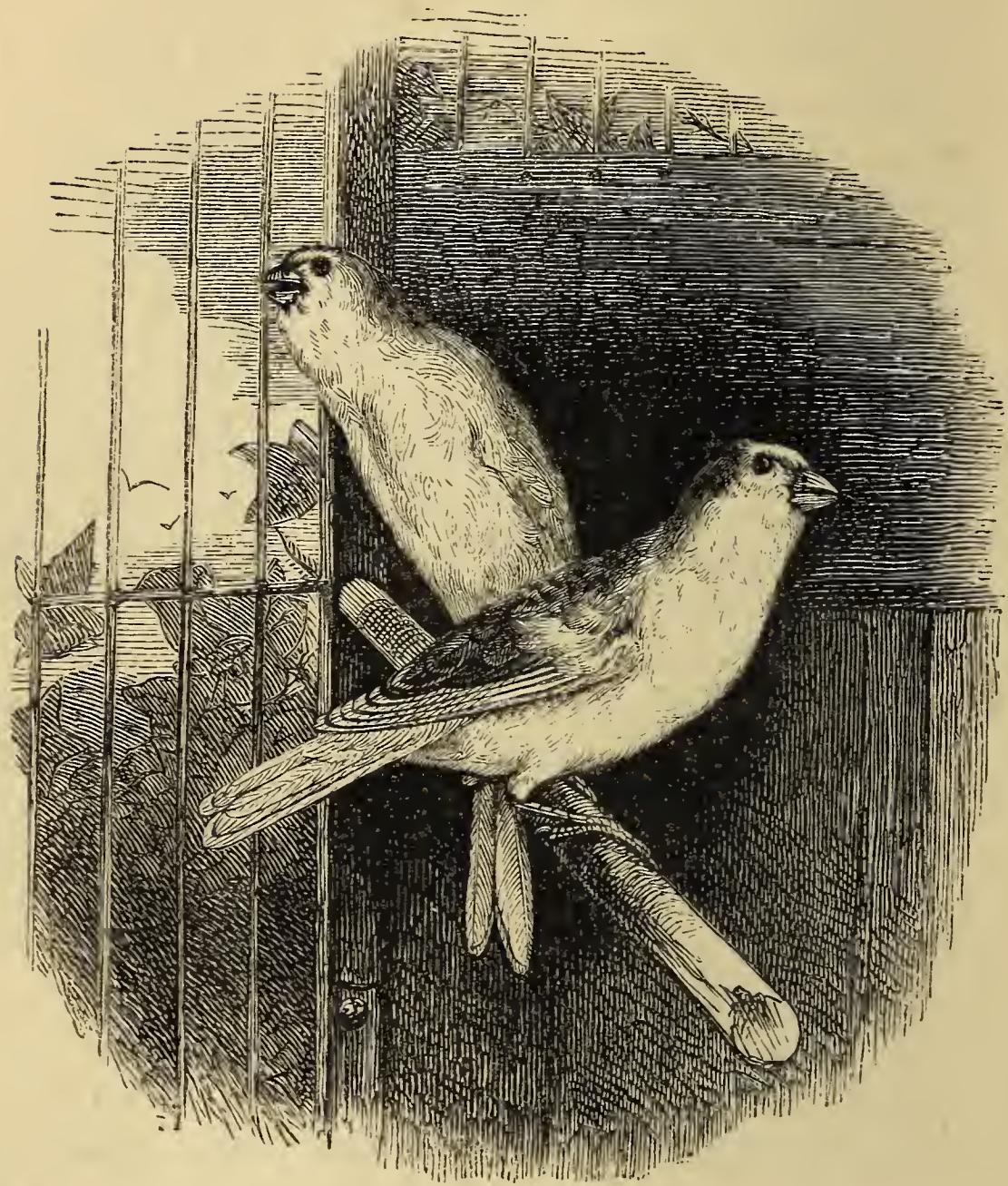
a yellowish hue at the sides. The feathers of the forked tail are black edged with white. In winter the crimson and bright red of the head and breast disappear and give place to brown. The female is not so agreeably coloured as the male. In confinement the colours of the Linnet are not so brilliant as when the bird is free.

During the autumn and winter Linnets flock together in considerable numbers, perching at eventide on the tops of trees in companies, where they remain for a time twittering together ere they drop down to roost among the low bushes or hedgerows. The flocks go forth at dawn to their foraging grounds, where they feed on the seeds of various plants—the charlock, the kail, the wild mustard, the dandelion, the thistle, and other wild weeds ; and in so doing they doubtless render an important service to the farmer ; they also feed on insects and larvæ.

When pairing-time comes in spring the flocks separate, and the pairs make off and set about preparing their nests. They generally select for their home some bush or thicket, and make their nests near the ground on some heath or common, but now and then are known to build in trees at a considerable height. They are not very successful in concealing their nests from observation ; they build them of small twigs, moss, and wool, lining them with feathers, hair, and soft down : numbers of their nests are always discovered and cruelly plundered by village boys. The female lays four or five eggs.

The Linnet is cheerful and lively in confinement, and with many persons is preferred to other caged songsters, on account of the surpassing sweetness of its note.

THE CANARY.



THIS favourite singing-bird was first brought to Europe from the Canary Islands several centuries ago, and Italy was the first European country in which it was reared. In its wild state the plumage of the Canary is greenish brown, but little resembling the brilliant golden hues of our caged birds. The alteration in the appearance of the bird is the result of domestication; and Canaries are now to be had of nearly all colours. The most valuable of the many

varieties are those with the body white or pale yellow, and the head, wings, and tail of yellowish dun ; next to these, those with a grey or blackish body and a yellow head are preferred ; speckled or variegated birds are much less esteemed, and are valued chiefly for breeding.

Canaries will breed freely in confinement, without much trouble on the part of their owners. The hen-bird will make her nest with moss, and if well supplied with that will require little besides ; but if moss be wanting she will use other materials, such as hay, hogs' hair, lint, wool, or paper-shavings. The hen generally begins to lay about a week after first pairing, and lays from two or three to six eggs, which are of a delicate sea-green hue, marked at one end with deep purplish spots. She will generally lay three or four times between April and September, and is most untiring in sitting upon her eggs. When hungry she will leave the nest for a short time, to feed, and then the cock-bird will take her place ; but she pecks at him and drives him off as soon as she returns, and resumes that duty herself. After the young are hatched, the cock-bird chiefly attends to them ; but they have often to be brought up by hand, and when that is the case they require twelve meals a day.

Canaries may be taught, and frequently are taught, to pipe musical airs, and sometimes even to pronounce correctly certain words. In order to teach them well, however, their education must begin very early. As soon as he is a fortnight old, the bird who is selected to be taught is separated from his parents and from all other birds, and is placed in a cage partly darkened with a curtain. Here he is allowed to hear no sounds but those of the melody which he is to whistle, which is played over to him many times a day, either from a flageolet, a bird organ, or (which is best of all) from the lips of some one who can whistle it well, and always in the same key. The lesson is repeated most

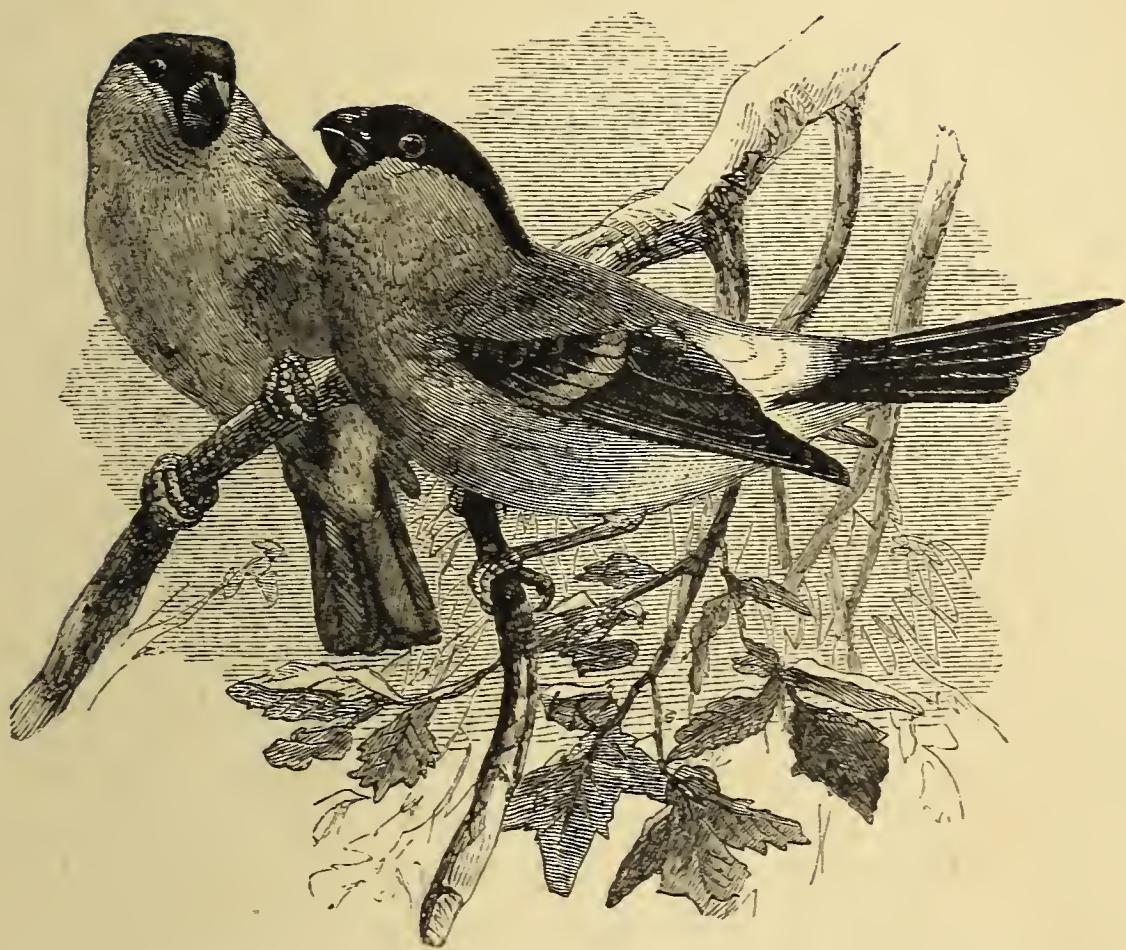
frequently in the mornings and evenings. From two to six months, according to the capacity of the bird, are occupied in teaching him a single air. Some clever birds will sing several airs, and some have been taught to pronounce words with remarkable distinctness. Mr. S. L. Sotheby, in a communication to Mr. Grey, Vice-president of the Zoological Society, gives an account of a talking Canary, which was brought up by hand away from all singing birds, and which, when about three months old, astonished its mistress by repeating the endearing terms used in talking to it. It would further whistle like the dog-whistle used in the house, and would pipe the first bar of "God save the Queen" —while the notes of its song resembled those of the nightingale.

Canaries in cages are subject to the attacks of a small parasite called the red-mite; when the birds are thus plagued they droop and show symptoms of severe illness. These red-mites are frequently bred in the materials sold by the bird-fanciers for nest-making, and therefore none such should be admitted into the cage until they have been plunged in boiling water and afterwards dried. The red-mites may be destroyed by the use of the insect powder sold at the bird-shops, which will not injure the birds.

Some years ago the Russian gentry took a fancy for Canaries, which suddenly became the fashion, and high prices were paid for accomplished birds. The German breeders supplied the demand, and shipped large numbers of the birds to St. Petersburg. As not one in a hundred of them survived the fierce winter of Russia, fresh cargoes had to be despatched every year. This cruel traffic still continues.

Great numbers of Canaries are constantly bred in London, and the breeders have as many as thirty varieties on their list.

THE BULLFINCH.



THE Bullfinch is well known in all parts of England, but is met with much more numerously in some districts than in others. He is the most strikingly showy of all our small birds, from the brilliancy and the contrast of his colours. In the male bird, the base of the neck and the back are a rich slaty grey ; the top of the head, the greater wing-coverts, the upper tail-coverts, and the chin are jet black, and the tips of the wing-coverts are white, forming a white bar across the wing ; the quill-feathers of the wing and tail are black, and the sides of the head, the throat, breast, and abdomen are of a light peachy red ; the bill is a deep black. The female and the young birds are not so brilliantly coloured as the adult male.

The food of the Bullfinch is mostly of a vegetable
2. N

kind. In the winter it lives upon dried seeds of various sorts, gathering them from the hedgerows, woods, and copses. In the summer it feeds upon the buds of trees, and is said to select the fruit-bearing buds in preference to others ; on this account the owners of gardens make war upon the Bullfinches, regarding them only in the light of destroyers. It has, however, been urged in favour of poor Bully, that the trees and bushes which he has apparently stripped of buds in early spring have afterwards borne heavy crops, and that therefore the pruning thus effected by the bird has been beneficial instead of injurious.

The Bullfinch builds its nest in the retired part of some wood or coppice, not uncommonly in a leafy branch of hazel, at no great height from the ground. The eggs, generally five in number, are greenish white, marked with violet and purplish streaks and mottlings. The parent birds take great care of their young, who remain with them during the whole of the autumn and winter ; thus a flock of Bullfinches seldom consists of more than five or six, who may be seen flying about and foraging in company, and rarely associating with other birds. In confinement the Bullfinch is loving and affectionate to its owner, but is at the same time exceedingly jealous and combative, and will sometimes fight with a fellow prisoner until one or the other is killed. Bullfinches long kept in cages are apt to lose their brilliancy of colour, and become changed to a general dingy hue ; the cause of this is probably the change of food to which their imprisonment subjects them.

The wild note of the Bullfinch is not remarkable ; but, as he is capable of receiving a musical education, possesses great powers of imitation, and has a good memory, he is in high favour with bird-fanciers and teachers. His talents have been cultivated to the greatest perfection by the Germans, whose Piping Bullfinches used to be in great repute, and were sold for

enormous prices. A pair which were exhibited in London some years ago performed entire tunes in a manner closely resembling the peculiar flutey tones of the bird-organ, with which they had doubtless been taught. The best pipers, however, are those which are taught by an instrument played by a performer who can give the right expression to his music, which expression the birds will be sure to imitate. While being taught, the birds are kept separate, and suffered to hear no other sounds than the lesson they have to learn.

THE COMMON CROSSBILL.

THE Crossbill is remarkable for the singular form of its beak, of which the upper and lower mandibles cross each other, a structure which at first sight would appear to prevent the bird from picking up its food. This form and arrangement of the mandibles is, however, precisely that which is most advantageous to the bird, when the nature of its food is taken into account. The Crossbill feeds principally on those kinds of seed which are deeply embedded in their coverings, such as apple-pips, and the seeds of the larch, pine, and fir, shut up in hard woody cones. By means of its crossed bill and its tongue it is able to get at these seeds with the utmost readiness and facility ; it cuts into the core of an apple in a few moments, and extracts the pips ; and it can lay open the fir seeds by inserting the points of the beak under the scales of the cone, and then by a quick lateral motion rending them away. It can also pick up the smallest seeds—having the power to bring the points of the mandibles together without crossing—and can shell them as rapidly as other birds.

The Common Crossbill is not much larger than a bullfinch, but is a strong stout bird, and possessed of

considerable muscular power. Its plumage is rather gaudy, being varied according to its age with green, yellow, orange, and reddish brown. It seldom breeds in this country, and is much more common in Sweden, Norway, and Germany, in the extensive pine forests of those countries. Flocks of them occasionally migrate hither, and have been seen from time to time, in plantations of fir and larch, in considerable numbers—



remaining here from October to the end of April. Their song is a low pleasant warble. They are shy in their habits, and have the cunning to hide themselves instantly, in case of alarm or danger, by squatting closely on the branches, so that they cannot be seen from below.

On some rare occasions the Crossbill has been known to make its nest in the northern parts of our island. It commences building at the end of February or in

the early days of March: the beaks of the young nestlings are not crossed until after the birds are fledged, but resemble those of other young birds—the peculiar development of the beak not being required until they have to get their own living; further, the crossing of the beak is not uniform—in some individuals the upper mandible crosses the lower on the right side, and in others on the left.

When captured the Crossbill soon becomes reconciled to confinement, and will feed freely on the seeds of fir cones. In captivity the gaudy plumage loses much of its brilliancy, the red and yellow colours giving place to dull dark brown.

Other species of the Crossbill are, the Parrot Crossbill, resembling the above, but frequenting the Arctic regions, and rarely making its appearance in this country; and the White-winged Crossbill, also a northern bird, and of much rarer occurrence in the British Islands.

The three species are nearly of a size, neither of them exceeding seven inches in length, the females being rather larger than the males.

THE CARRION CROW.

THE Crow is too familiarly known to need minute description. In figure, and in its uniform black garb, it nearly resembles the raven, than which it is considerably less in size; and it is also very like the rook, for which it is often mistaken at a distance, although it slightly exceeds the rook in length. The Crow has deservedly the character of a greedy and foul-feeding bird, as it will make a meal of almost anything that comes in its way. Though fond of carrion, as its name denotes, it is a bold and reckless assailant of numerous living creatures. It is known, when urged by hunger or by the clamours of its growing offspring, to attack

young lambs, to mangle them, and to carry them off piecemeal to its nest. It will seize upon the young of hares and rabbits, and fly away with them. It makes prize of frogs, newts, lizards, and various other reptiles, and it will enter the poultry-yard and plunder the nests of their eggs, and bear them off impaled on its beak. At the sea-side, when the tide ebbs, Crows will often come down to the shore, and may be seen at low-water



feeding by the hour together on the young crabs, the shrimps, and smaller crustacea left in the mud and ooze by the retiring sea. It is said that if at these times they find any hard-shelled creature which they cannot crack with their beak, they will fly with it to a great height and drop it upon a rock.

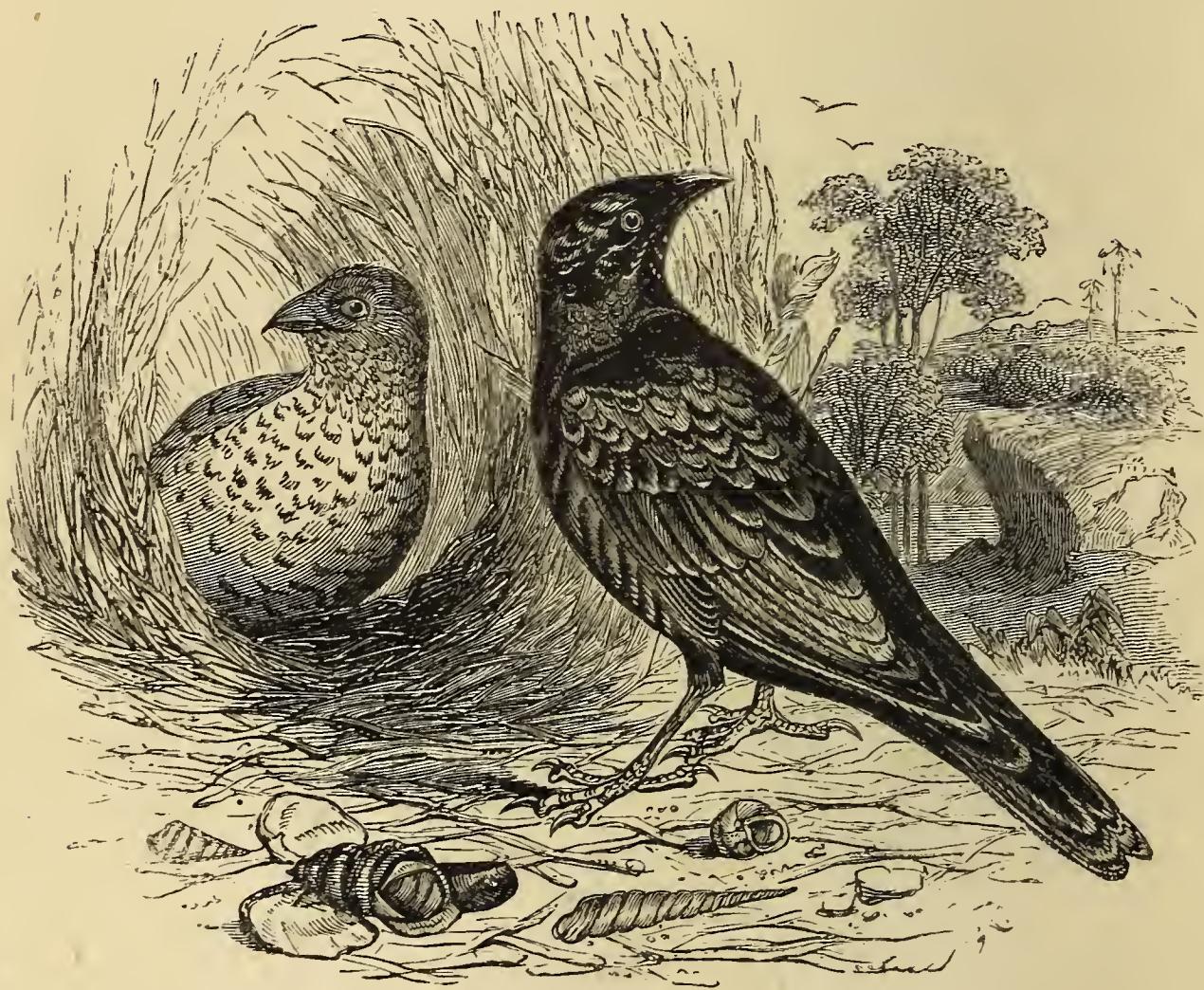
The Crow is not, as the rook is, fond of society, but prefers to build his nest in some lofty tree far removed from the noisy homes of the gregarious birds. The

nest is built up of sticks, and is usually saucer-shaped, and much wanting in the neatness which is a general characteristic of the nests of birds. The interior is of grasses, rooty fibres, horse hair, cow hair, sheeps' wool, moss, and other soft substances ; it is but rarely that the Crow uses the same nest for two seasons following, as he generally prefers to construct a new nest near the site and from the materials of the old one. The eggs are of bluish green speckled with ash and olive, often exhibiting new variations in their colour and mottling ; in number they are from four to six. Crows being among the earliest birds to pair, their young are generally hatched while other birds are laying their eggs. They are most carefully fed and tended by the parent birds, whose attachment to each other is also constant and remarkable. These birds are noted for their intelligence, which seems mostly to take the form of caution and cunning. Thus when their nests are threatened they are seen to carry off their eggs to a place of safety ; and it is noticed that they suffer no accumulation of bones, egg-shells, feathers, and other remains of their plunder, near their nests, but invariably carry off such disjecta to a distance—to avert suspicion. The Crow is known to live to a great age, but it is not likely that there is any foundation for the assertion of some ancient writers to the effect that he will outlast nine generations of men.

THE SATIN BOWER BIRD.

THIS beautiful bird is a member of the family of starlings, and is about the size of the common starling of this country ; the plumage of the male is of a deep purple colour, and glossy like satin—that of the female and the young birds being of an olive green. It is an inhabitant of New South Wales, where it is not uncommon, though its nest has not as yet been discovered, so effectual are the means adopted by the bird to conceal it.

The Bower Birds derive their name from the bowers or arbours which they construct for themselves, and which seem to be totally unlike anything else to be met with in the very varied architecture of the feathered tribes. These bowers are thus described by Mr. Gould in his "Birds of Australia":—"They are usually placed under the shelter of the branches of some overhanging tree in the most retired part of the forest; they differ considerably in size, some being larger, while others are



much smaller. The base consists of an exterior and rather convex platform of sticks, firmly interwoven, on the centre of which the bower itself is built. This, like the platform on which it is placed, and with which it is interwoven, is formed of sticks and twigs, but of a more slender and flexible description, the tips of the twigs being so arranged as to curve inwards, and nearly meet at the top; in the interior of the bower the

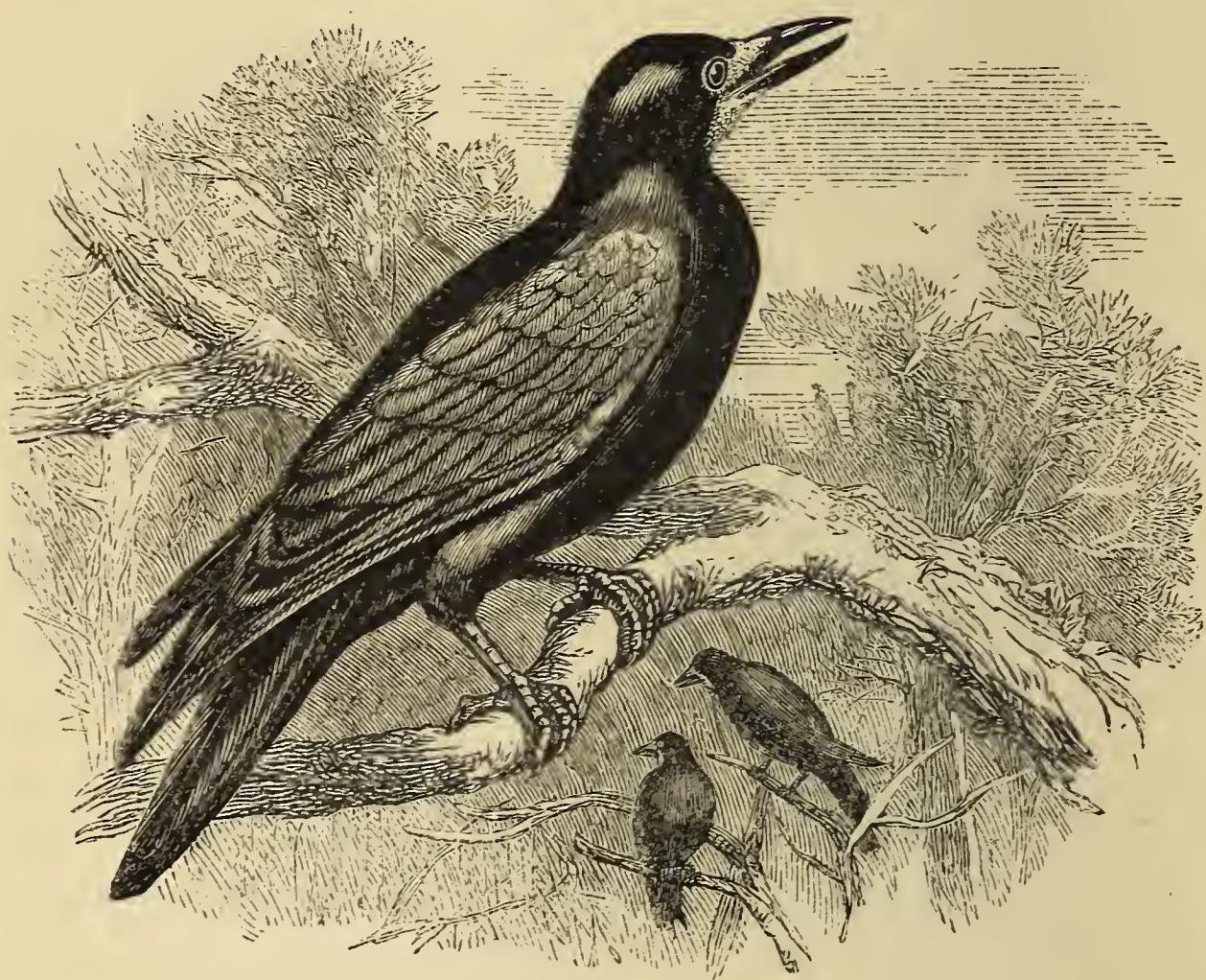
materials are so placed that the forks of the twigs are always presented outward, by which arrangement not the slightest obstruction is offered to the passage of the birds. For what purpose these curious bowers are made is not yet, perhaps, fully understood ; they are certainly not used as a nest, but as a place of resort for many individuals of both sexes, who, when there assembled, run through and round the bower in a sportive and playful manner, and that so frequently that it is seldom entirely deserted. The interest of this curious bower is much enhanced by the manner in which it is decorated, at and near the entrance, with the most gaily-coloured articles that can be collected, such as the blue tail-feathers of the Rose Hill and Lory parrots, bleached bones, the shells of snails, &c. Some of the feathers are stuck in amongst the twigs, while others, with the bones and shells, are strewed about near the entrance. The propensity of these birds to fly off with any attractive object is so well known, that the blacks always search the runs for any missing article."

These birds bear captivity very well, and thrive tolerably in this country, where they will construct their bowers, and manifest the same eagerness in procuring materials for decorating them : they will not, however, breed in confinement. Their food is said to be entirely vegetable, and consists chiefly, when the birds are wild, of fruit and berries. Their habits are gregarious, and their flocks, which at some seasons are very numerous, are under the guidance of chosen leaders, who conduct their migrations from one part of the Australian continent to another.

THE ROOK.

THE Rook is one of the most familiar of British birds, being fond of making its home near the dwellings of man. It associates in large flocks, often comprising

several thousands in number, who build their nests in the summits of lofty trees, not only in the open country, but occasionally in towns also, and even in the heart of great cities. The Rook, when full-grown, is about eighteen inches in length, and after it has moulted once, the skin upon the forehead and on the base of the neck is white and bare of feathers. It is rather a voracious feeder, and its food seems to comprise almost everything to which it can help itself, whether animal or vegetable.



It pecks up the springing wheat, it digs up the young potatoes, it bores the turnips in the ground, it eats the eggs of partridges and pheasants, and, when pressed by hunger, has been known to devour the young birds. There is no doubt, however, that it more than compensates for all the mischief it does to the farmer, by the important services it renders him in clearing his land of myriads of grubs, and the larvæ of insects which

would otherwise destroy the crops. Wherever the ploughman is at work turning up the soil, the Rooks may be seen following closely in his track, and clearing off the worms and larvæ as fast as they are exposed to view ; and where fields have been so infested with grubs as to be almost useless, the Rooks have been known to rout up the entire surface with their beaks, and free the land from the noxious pest. One of the most destructive of all grubs is that of the cockchafer beetle, which the Rook devours by thousands.

Towards sunset the Rooks rise high into the air from their feeding-grounds, and, cawing to one another, assemble in large flocks, and then wing their way in long blackening trains to their homes in the rookery—a spectacle which is one of the commonest and most pleasant of all rural sights.

Rooks pair very early, and begin building their rather slovenly nests long before the leaves are on the trees. During the nest-building they squabble and fight and clamour all day long ; they have been observed to punish those birds who steal the materials belonging to others, and to destroy certain nests whose owners have in some way or other offended them. The female lays four or five greenish eggs spotted with brown ; and while she is sitting she is constantly fed by the male. The young are well cared for by both parents, and about the end of May are able to leave the nest and hop about among the tree-tops. At this season Rook-shooting begins, and before it is over more than half the young ones are killed by the sportsmen, and are eaten in pies, their flesh being tender and of relishing flavour. At the first report of the gun the parent Rooks rise into the air beyond the reach of the shot, and with plaintive cawings witness the destruction of their offspring, whom they have not the power to save. This yearly slaughter of the young birds is said to be necessary in order to prevent too great an increase of the race.

Rooks are spread over the greater portion of Europe, but are not found very far north. Numerous as they are in Great Britain and Ireland, there are none in Orkney and Shetland. There are none in Jersey or Guernsey, and but few are found in Sweden, Denmark, and Russia. Specimens of white Rooks have been seen occasionally, but are very rare. In confinement these birds become attached to their owners ; they may be taught to imitate different sounds, and to play amusing tricks.

THE JACKDAW.

THE Jackdaw is the smallest of the British crow family. In form he resembles the rook, but, unlike the rook, he wears a grey patch on the crown and back of the head, though this patch is not seen until the bird is full grown and has moulted its first feathers. The length of the adult is about fourteen inches ; its general colour is black, with a glossy tinge of blue on the wings. The female has the grey patch on the nape and crown of a darker hue than the male.

The Jackdaw, from its familiar habits and its propensity for intruding everywhere, is well known, and is rather a pet among country people from its odd amusing ways. It is fond of building near the dwellings of man, though it always conceals its nest if possible, choosing the holes in the masonry of church towers and steeples, or the dilapidated remains of deserted buildings for the purpose. Sometimes it will make its nest in a hollow tree, at others in a crevice in a rock, and ere now has been known to build in a rabbit-burrow. On one occasion, when a colony of Daws had begun building in an old church tower, a party of workmen began pulling down the tower preparatory to erecting it anew : the Daws held a council characterised by a deal of shrill clamour, which, after a time, however, came to a sudden

stop ; then they broke up, and instantly began to execute their resolution. Every bird flew to his unfinished nest, and each began the removal of his own materials to another tower, which stood in a village distant about a mile and a half. They flew, laden with their property, with great swiftness, exceeding a mile a minute, and, beginning about two o'clock, had accomplished their flitting before four. The writer watched



the process with much interest the best part of the time. The nest of the Daw is a shabby structure of sticks covered with hay, wool, feathers, and other soft substances ; it is moreover, often the receptacle of stray articles, which the owner, who is almost as great a thief as the magpie, is in the habit of purloining as opportunity offers. The eggs are from four to six in number, of a light blue tint spotted with ash-colour and dark brown.

The Jackdaw seems fond of associating with other

birds, and especially with rooks, with whom it is mostly on friendly terms, and whose habits nearly resemble its own. Daws will also live in harmony with pigeons and starlings ; and near the sea-coast they are no less at home in the company of gulls and sea-mews.

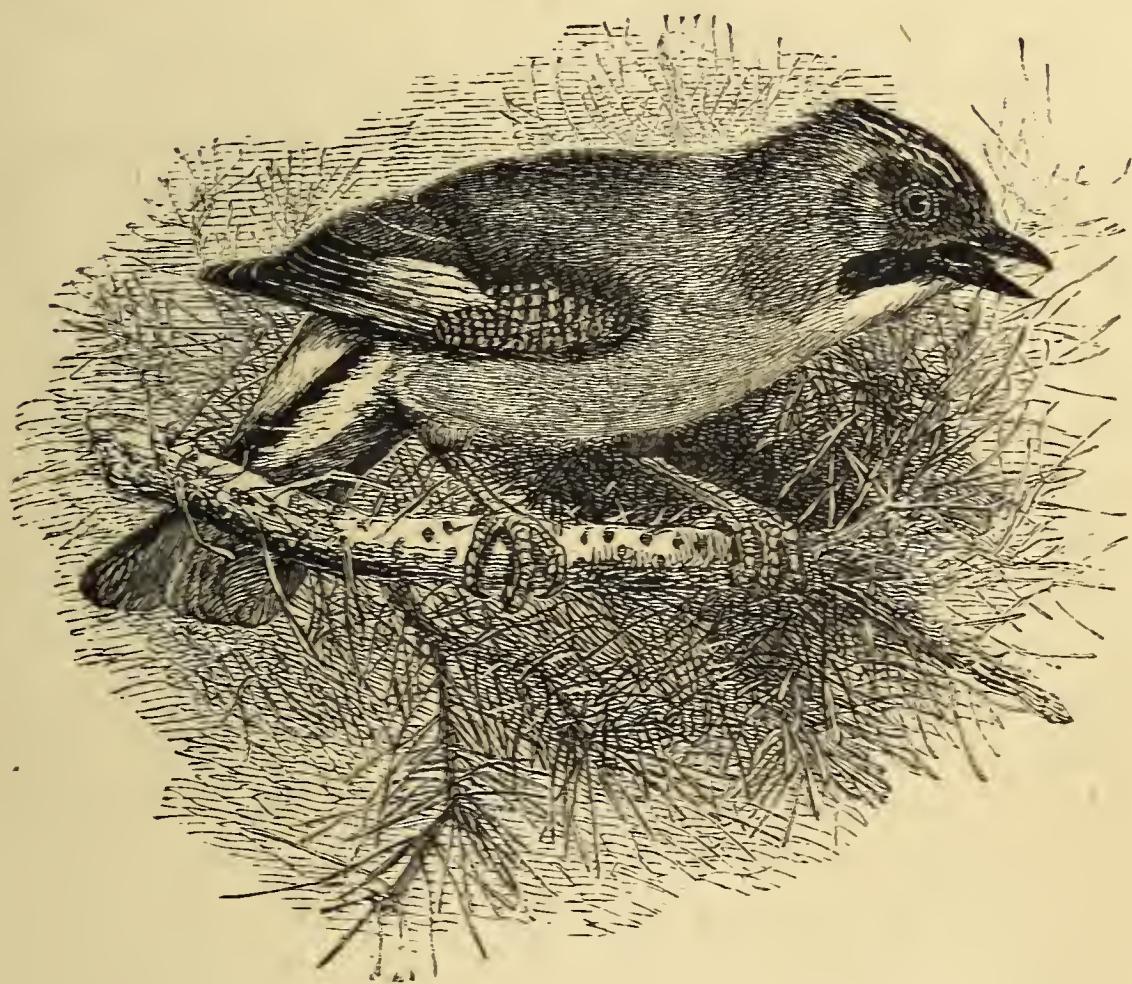
In domestication the Daw is a most amusing, but a mischievous fellow. His attachment to his owner is very great, and at times rivals that of the dog ; but his impudence is at least on a par with his affection, and generally brings him into disgrace. He is often of use in the garden, where he devours enormous quantities of grubs and beetles ; but he is equally greedy of fruit, and has to be banished or caged before that begins to ripen, to prevent his ravages. His imitative powers are very great, and he may be taught without much trouble to pronounce a number of phrases with perfect distinctness. A Daw of our acquaintance formed a close friendship with the dog who guarded the house. When Spot was tied up, Jack rarely wandered far from his kennel, but voluntarily shared his confinement (and his dinner), and would hover and chatter around him for hours. When Spot was free, dog and bird would often make distant excursions together ; and if Spot was away with his master, Jack would be heard calling “Spot, Spot !” at intervals—evidently anxious for the return of his friend.

THE JAY.

THE Jay is to be found throughout the whole of England, though it is nowhere very common. In size it is rather less than an average pigeon, and is specially remarkable for the gay colouring of its plumage. The upper part of the body is reddish brown, inclining to purple. The primary wing-coverts are bright sky-blue barred with black. The feathers of the crest on top of the head are grey, spotted with black ; and the quill

feathers of the wings and tail are black. The eye is a bright blue grey, and gleams and sparkles when the bird is excited.

The Jay is oftener heard than seen, being fearful of man, and fond of concealing itself in the thickest and closest coverts; in such retired places it usually makes its home. Occasionally, however, Jays are found living apparently at their ease in the neighbourhood of human dwellings. The note of the Jay is very various, and



has been compared to the sawing of timber, the scream of the peacock, and the cry of the parrot; its most disagreeable tones are sent forth when it is flying off under sudden alarm.

The food of the Jay is both vegetable and animal; and the bird seems to have an appetite for almost everything that comes in its way. It eats berries, nuts, and acorns, and the flowers of several plants; it devours hosts of caterpillars, moths, beetles, and grubs,

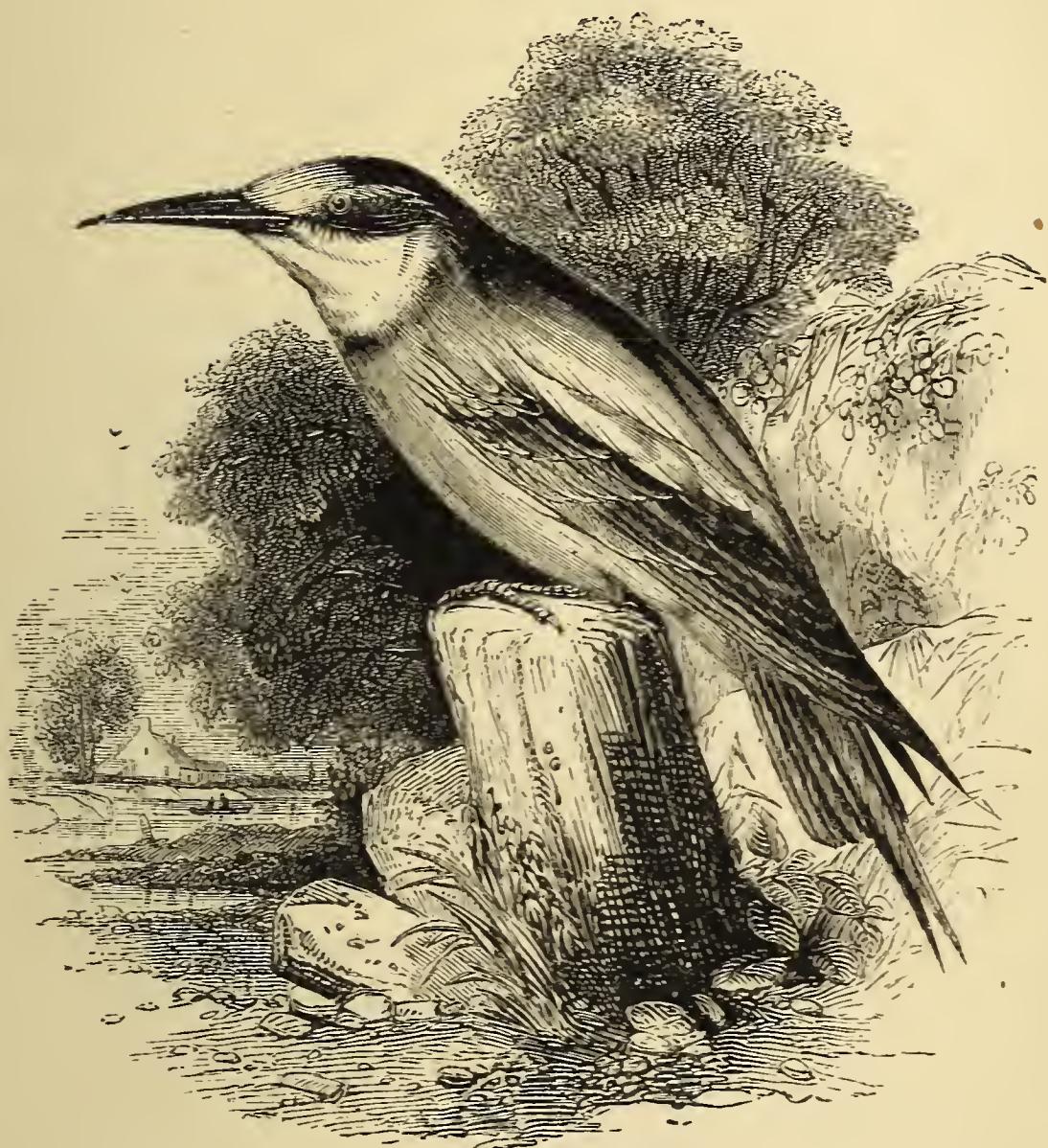
and is known to gorge itself with the unfledged young of smaller birds, which it rifles from the nest. It makes havoc among the gardener's choicest fruits, despoiling the cherry trees in particular, and it plunders the kitchen-garden of the tender growing plants and of young peas and beans. It is, further, specially fond of eggs, being most partial to those of pheasants and partridges—on which account the gamekeeper is its deadly foe, and will shoot it down whenever it comes within reach of his gun. Its fondness for eggs is often fatal to it in another way, as it is frequently caught in traps baited with eggs.

The Jay's nest is rather a slovenly structure of grass, sticks, root-fibres, and some softer materials laid upon them ; it is always placed at a considerable height from the ground, and in many instances is found resting against the main trunk of the tree in which it is built. The eggs are four in number, and the mother has usually two broods in a year. It is when she is teaching her brood to get their own living that the Jay is most destructive : she then takes her young family into the orchards and gardens, and their united ravages are most annoying.

When tamed the Jay becomes attached to those who treat it well, and manifests considerable intelligence. It will imitate very closely almost any sound that it hears frequently, and delights to repeat the sounds emitted by animals in its neighbourhood, such as the barking of dogs, the neighing of horses, or the bleating of sheep. It may also be taught to talk, and will repeat words and phrases in the tones in which they are uttered. Like the magpie, the Jay is an habitual thief, and when domesticated will purloin and hide away any portable trifle to which it can obtain access.

The feathers of this bird are sometimes worn in ladies' bonnets ; and they are in demand among fishing-tackle makers, who use them in the manufacture of artificial flies.

THE BEE-EATER.



THIS beautiful bird, the brilliant plumage of which reminds the observer of that of the kingfisher, from its mixture of gold and green, and the changes of colour which vary with the change of position, is an inhabitant of the south of Europe. During the summer season it is not at all uncommon in Italy, Germany, the south of France, and in Sicily, Sardinia, and other islands of the Mediterranean. It is very rarely seen in England, about a dozen specimens only having been observed during the present century.

The habits of the Bee-eater have some resemblance

to those of the swallows. Like them it feeds on the wing, its prey consisting especially of wasps and bees, which latter it seems to prefer to all other kinds of food, and which it swallows without experiencing any inconvenience from their stings. Besides these, however, it feeds on beetles, grasshoppers, and similar creatures ; and, from its similarity in habit and structure to the kingfisher, it is supposed to feed also on fish.

Bee-eaters make their nests in the banks of rivers and streams, and in this they resemble the sand-martins, digging burrows in the banks much in the same way, though usually to a less depth, their burrows rarely penetrating further than six or eight inches into the soil. The nest is of moss, and usually contains five or six eggs of a glossy colourless white. They are gregarious birds, assembling and foraging in flocks of ten or twenty to fifty in number ; the sweeping flight of a flock of them produces a dazzling effect in the glancing sunshine.

The Bee-eater is a sad enemy to the keeper of bees. The bird not only visits the hives, and devours the workers on their return home, but it haunts the spots whither the bees resort to collect their valuable stores. In the pursuit of its prey it manifests extraordinary quickness and command of wing, turning and twisting and changing its course in the air as rapidly as the swift or the house-martin. It is seen sometimes soaring to a great height, and at others skimming along close to the surface of the ground ; and occasionally it perches upon the branch of a tree as if to rest from its labours for a while. During its flight it utters unceasingly a pleasing warble in a low rich tone.

Where the Bee-eater is common it is prized for food, and as it is of tolerable size, measuring eleven or twelve inches in length, it is not a despicable addition to the poor man's table. In the Greek islands it is frequently caught by a process of aërial angling : a bee, or grass-

hopper, or some other suitable insect bait, is attached to a small hook and allowed to fly off with as much of a thin line as it can carry ; the unsuspecting bird snaps it up, and swallowing it, hook and all, is drawn down to the grasp of the angler, as easily as a fish would be drawn up from the water.

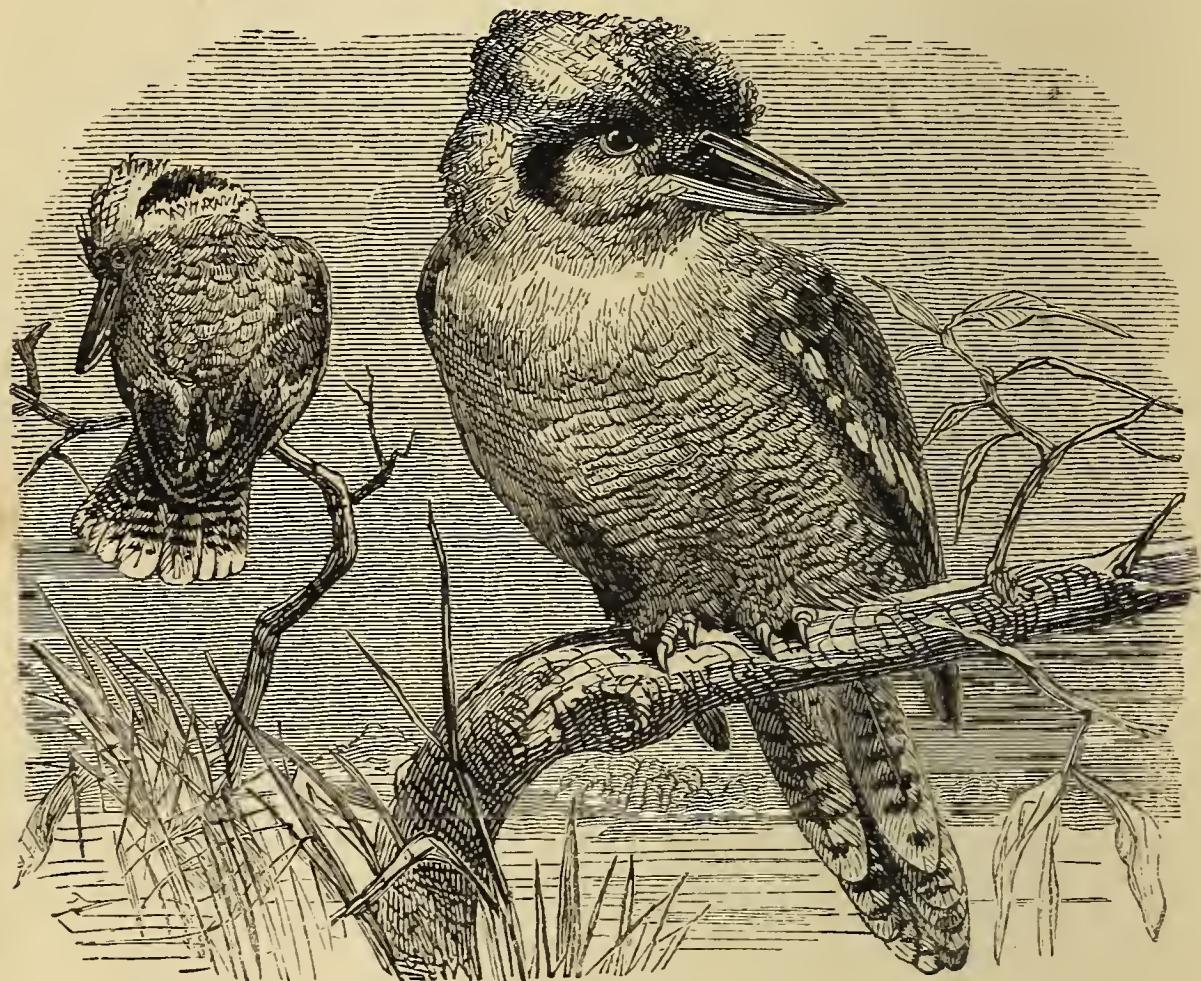
The colours of the male Bee-eater are most striking. The top of the head is a rich brown ; the forehead white, passing into bluish green ; the upper plumage chestnut ; the throat golden yellow ; wings variegated with deep azure, brown, and green ; the upper tail-coverts the same as the wings ; the ear-coverts are black, and the eye light scarlet. The female is marked by colouring of a generally paler hue ; and in the young birds the colour is neither so brilliant as in the adult, nor is the arrangement of the colours the same.

These birds are plentiful at the Cape of Good Hope, where the Hottentots find them useful as guides to the nests of the wild bees.

THE LAUGHING JACKASS.

THE Laughing Jackass, or Giant Kingfisher, is the largest of the kingfishers, measuring, when full grown, not less than eighteen inches in length, and it is bold and powerful in proportion to its size. Though not so brilliant in colour as many of the kingfishers, it is yet a handsome bird : the back and upper surface is olive brown, the crest dark brown, the wings brown-black, some of the feathers being tipped with green ; the breast and under parts are white, tinged with a light brown ; the tail is a chestnut colour barred with black and tipped with white. This bird is an inhabitant of New South Wales and other parts of Australasia, being thinly scattered over a wide district of country. It obtains its name from its singularly discordant cry, or

rather laugh, which has been compared to that of the hyæna, and even to the yelling of demons, so frightful is the noise produced. The bird has the regular habit of repeating its terrific performance at dawn and at sunset, and this regularity has procured for it the name of the Settler's Clock. Sometimes, when emigrants on the road to their settlement are camping in the bush, the Laughing Jackass, attracted by the glare of their



fire, will pay them a visit, and startle them on a sudden with its dissonant uproar; and in this case it not unfrequently atones for its intrusion with its life, the travellers shooting, and cooking, and eating it on the spot.

As a true kingfisher, the food of this bird might be supposed to consist exclusively of fish; but in fact, though it does at times catch fish, it often takes up its

abode in districts where no fish are to be found, which it would not do if it preferred them to any other diet. It seems rather to prefer the smaller animals and reptiles, and certain of the crustacea: it eats various kinds of crabs, and will attack snakes, catching and killing them with great dexterity; and it is known to feed on insects. Unlike most birds, it affects no particular locality, but being able to subsist anywhere, is found both in the dense forests and on the arid plains; it is fond of resting on a branch, sitting with its chin sunk on its breast, and now and then waking up indulges in its dissonant laugh.

These birds make no nest; the female deposits her eggs in the hollow of a gum-tree upon the decaying wood. The entrance of the hollow is constantly guarded by one or other of the parents, who will do furious battle against any marauder approaching their treasure. The eggs are a spotless white.

THE HOUSE MARTIN.

ACCORDING to White of Selborne, who has given an admirable account of this interesting bird, the House Martin begins to appear about the middle of April, a few days later than the swallow. For some time after their arrival these birds play and sport about as if to recruit themselves after their long journey, deferring the business of preparing their nests until about the middle of May, when, if the weather be fine, they will set to work. "The crust or shell of this nest seems to be formed of such dirt or loam as comes most readily to hand, and is tempered and wrought together with little bits of broken straws to render it tough and tenacious. As this bird often builds against a perpendicular wall, without any projecting ledge under, it requires

its utmost efforts to get the first foundation firmly fixed, so that it may safely carry the superstructure. On this occasion the bird not only clings with its claws, but partly supports itself by strongly inclining its tail against the wall, making that a fulcrum, and, thus steadied, it works and plasters the materials into the face of the brick and stone. But then, that this work may not, while it is soft and green, pull itself



down by its own weight, the provident architect has prudence and forbearance enough not to advance her work too fast ; but by building only in the morning, and by dedicating the rest of the day to food and amusement, gives it sufficient time to dry and harden. . . . By this method, in about ten or twelve days, is formed an hemisphere nest, with a small aperture towards the top, strong, compact, and warm, and perfectly fitted for all the purposes for which it was

intended. But then nothing is more common than for the house-sparrow, as soon as the shell is finished, to seize on it as its own, to eject the owner, and to line it after its own manner.

“After so much labour bestowed in erecting a mansion, martins will live on for several years together in the same nest, where it happens to be well sheltered and secure from the weather. The shell or crust of the nest is a sort of rustic work, full of knobs and protuberances on the outside; nor is the inside smoothed with any exactness at all, but is rendered soft and warm, and fit for incubation by a lining of small straws, grasses, and feathers, and sometimes by a bed of moss interwoven with wool. In this nest the hen lays from three to five white eggs.” The young are carefully fed and kept clean by the parent birds until they are able to fly; and they are even fed on the wing by the parents as long as they require it. “As soon as the young are able to shift for themselves, the dams immediately turn their thoughts to the business of a second brood; while the first flight, shaken off and rejected by their nurses, congregate in great flocks, and are the birds that are seen clustering and hovering, on sunny mornings and evenings, round towers and steeples, and on the roofs of churches and houses. These congregations usually begin to take place about the first week in August, and therefore we may conclude that by that time the first flight is pretty well over. The young of this species do not quit their abodes all together, but the more forward birds get abroad some days before the rest. These, approaching the eaves of buildings, and playing about before them, make people think that several old ones attend the nest. They are often capricious in fixing on a nesting-place, beginning many edifices, and leaving them unfinished; but when once a nest is completed in a sheltered place, it serves for several seasons. Those which lay their eggs in a ready-finished house get the start in hatching of those that build new, by ten days

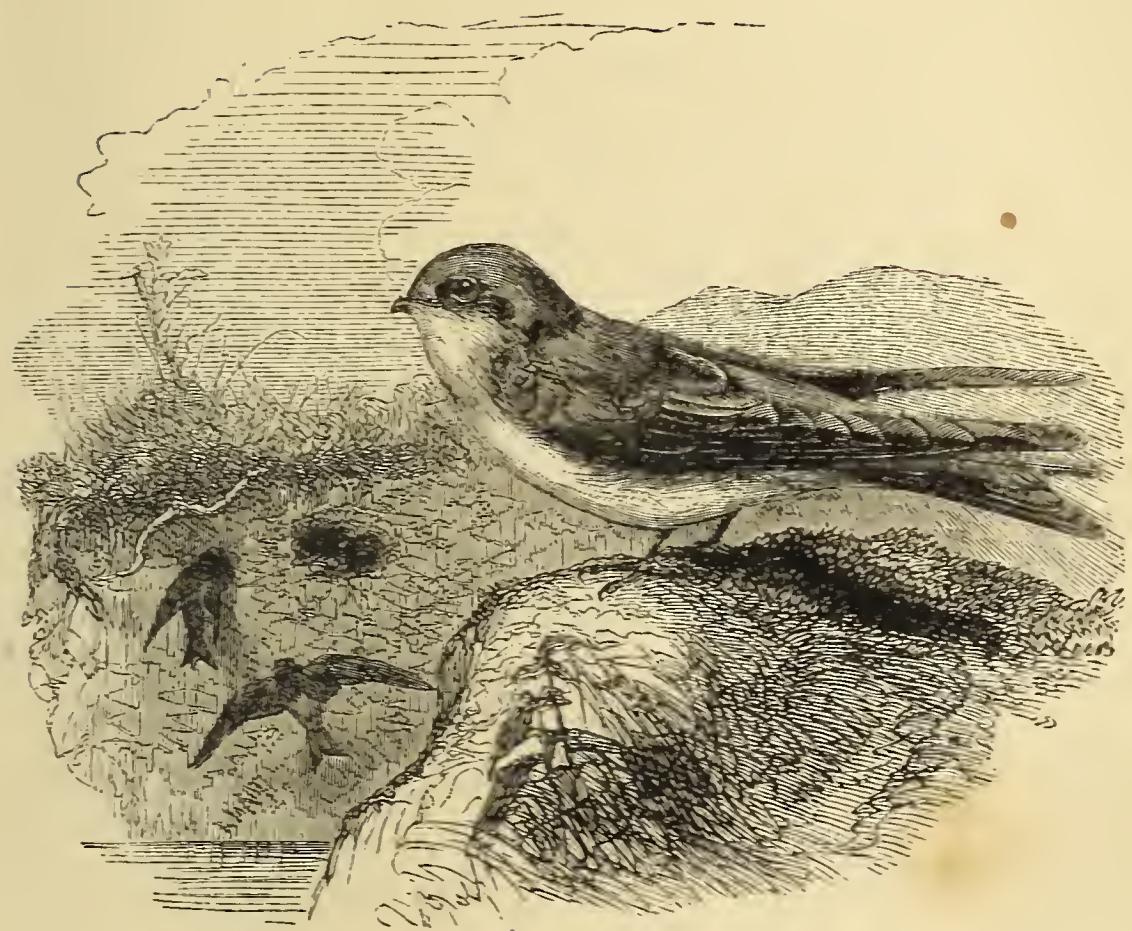
or a fortnight. These industrious artificers are at their labours in the long days before four in the morning ; when they fix their materials, they plaster them on with their chins, moving their heads with a vibratory motion. They dip and wash as they fly sometimes in very hot weather, but not so frequently as swallows.

“ Martins love to frequent towns, especially if there are great lakes and rivers at hand ; nay, they even affect the close air of London,” and have been seen nesting in Fleet-street and the Strand. They are the least active of the swallow tribe, and do not wander far for food, preferring some sheltered district, especially in windy weather. “ They build the latest of all the swallow kind, and are never without unfledged young as late as Michaelmas.

“ As the summer declines, the congregating flocks increase in numbers daily by the constant succession of the second broods, till at last they swarm in myriads upon myriads round the villages on the Thames, darkening the face of the sky as they frequent the aits of that river, where they roost. They retire . . . about the beginning of October,” but are sometimes seen a fortnight later. “ They therefore withdraw from us the latest of any species. Unless these birds are very short-lived indeed, or unless they do not return to the district where they were bred, they must undergo vast devastations somehow, and somewhere ; for the birds that return yearly bear no manner of proportion to the birds that retire.

“ House Martins are distinguished from their congeners by having their legs covered with soft downy feathers down to their toes. They are no songsters, but twitter in a pretty, inward, soft manner in their nests.” The colour of their plumage is black, with violet reflections on the head, nape, and upper part of the back ; the lower part of the back and all the under parts pure white. The entire length of the bird does not exceed five inches and a half.

THE SAND MARTIN.



THE Sand Martin is the smallest of the British swallows, measuring only five inches in length. It is of a sober colour, the upper parts of the body being a soft brown, the quill-feathers of the wings and tail black, and the under parts a pure white, with the exception of a brown band across the breast. This bird derives its name from its habit of making its nest in sandbanks, where it digs burrows varying from eighteen or twenty inches to four or five feet in depth—placing its nest, which consists merely of a few soft materials, such as moss, dried grass, and feathers, at the end of the burrow. On rare occasions it is known to burrow in clay or other soils than sand; but the soft sandstone is its usual choice, as affording it the greatest security.

The burrowing is a task of much labour, the whole

work having to be executed with the bill and claws of the little bird. It begins by cutting a funnel-shaped hollow about five inches in circumference in the face of the perpendicular bank, working from the centre outwards, and clinging by tail and claw to the soil as it proceeds, resting at intervals from its labour. When the hole is deep enough for the admission of its body, the bird can work much faster ; and as the burrow deepens, its diameter diminishes to about three or four inches. If, after having dug to some depth, the little worker comes to a stone, it either digs round it and loosens it so that it can be cast out, or, if it be too large for that, will change the direction of the burrow by turning either to the right or the left. However deep the burrow may be, it always shelves upwards from the entrance, so that no moisture can drain down towards the nest, or the rain be driven into it. This burrowing work is shared equally by the male and female bird, both of them working at it alternately ; the work is only carried on in the morning early, and consequently extends over several days. It is only the young birds who have this labour to go through, as the old ones always take possession of their old burrows, merely preparing the simple nest for the reception of their new broods.

The eggs of the Sand Martin are very small, and so thin in the shell that they can hardly be touched by the hand without breaking ; they are of a delicate pink colour when first laid, and from four to six in number.

The note of these birds is a soft and musical twittering, save when they are quarrelling, as they are given to do, when it rises to a scream. Their food is insects, chiefly gnats, and such as are constantly on the wing, though they are known to devour those of larger size, as wasps and dragon-flies.

The Sand Martin makes its appearance in this country about the beginning of April, and sometimes before the

end of March. During its stay it is not given to wandering very far, but feeds in the neighbourhood of its nest, which is generally near some stream or lake, where insects are always in abundance. In the beginning of September it takes its flight southward, and in a few days reaches the African coast, where it has its home for the remainder of the year.

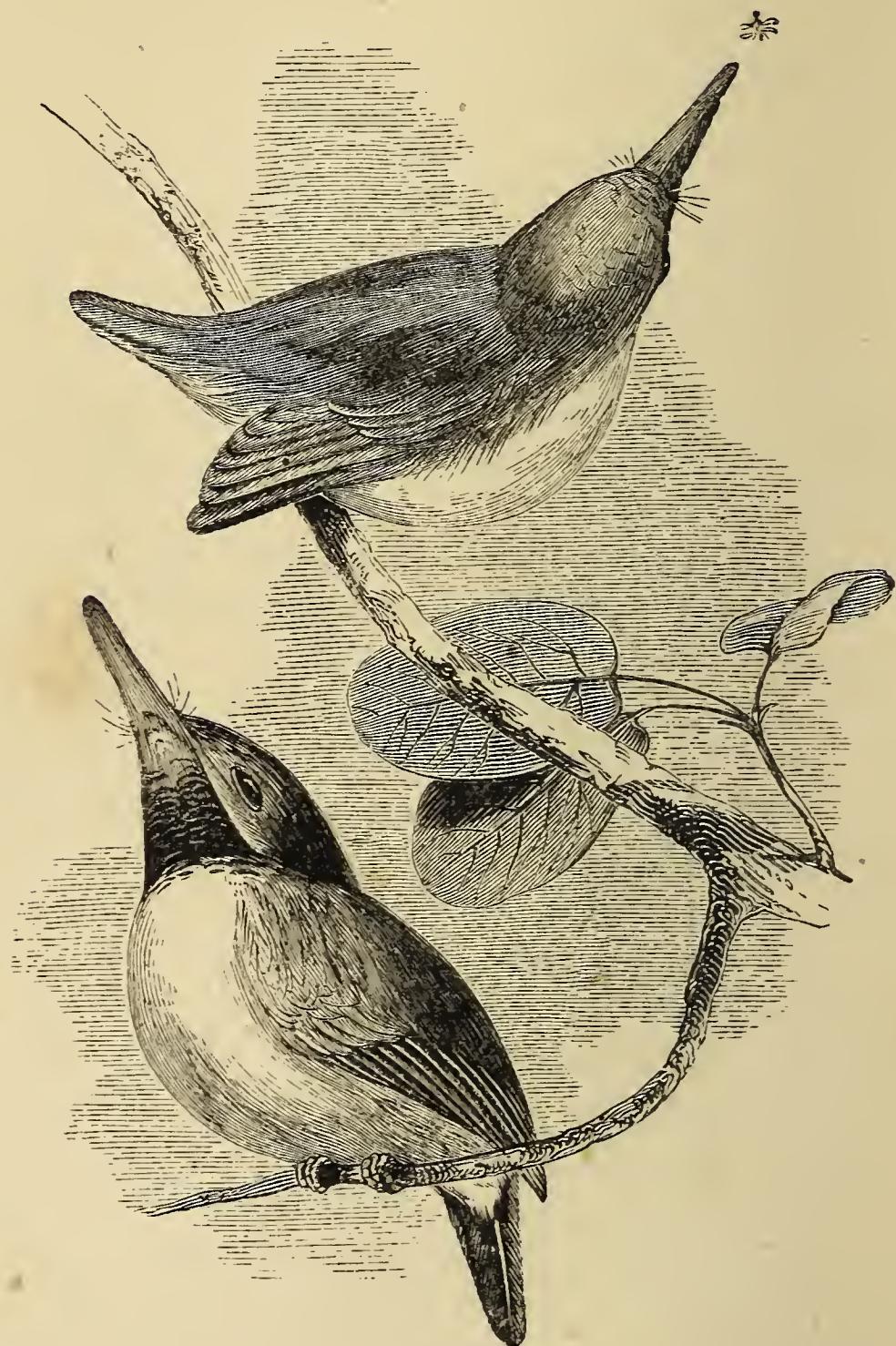
THE GREEN TODY.

THE Todies are curious little birds, distinguished by the brilliancy of their plumage, which is very similar to that of the kingfisher, and by the structure of their bills, which are long, broad, and flat throughout, contracting suddenly at the tip. They are found only in tropical America.

The Green Tody is accounted one of the most beautiful of the smaller tropical birds—not being much, if anything, larger than the common English wren. The upper parts of the body are bright green; the lower parts a yellowish white; the throat is scarlet; the sides of a rosy hue, and the lower tail-coverts yellow. The tail is very short; the legs long and slender. The food of these little creatures consists chiefly of insects which they find in the soft mud and silt of the ponds and streams they frequent: their broad flat bills are furnished with a number of small tooth-like asperities, through which they are enabled to strain or sift the liquid mud or water and retain their prey. They also forage for insects among the moss and herbage of the banks of brooks and streams.

The Green Tody is rather recluse in its habits, preferring to haunt lonely places, remaining generally near the ground in some umbrageous covert, and rarely flying to any height—its wings not being adapted for

long journeys in the air. From keeping so constantly near the ground it has obtained the popular name of "Ground Parrot." It is not at all a shy bird, but is so sluggish in disposition, or else so unsuspicuous of



danger, that it will allow any one to approach it closely, and will scarcely stir from the hand stretched forth to grasp it.

The nest of this Tody is usually placed in some

recess in the bank of a stream or pond, or in some convenient hollow dug by the bird itself ; it is made of moss, grass, feathers, and other soft materials, and contains four or five eggs of a bluish-grey hue spotted with yellow.

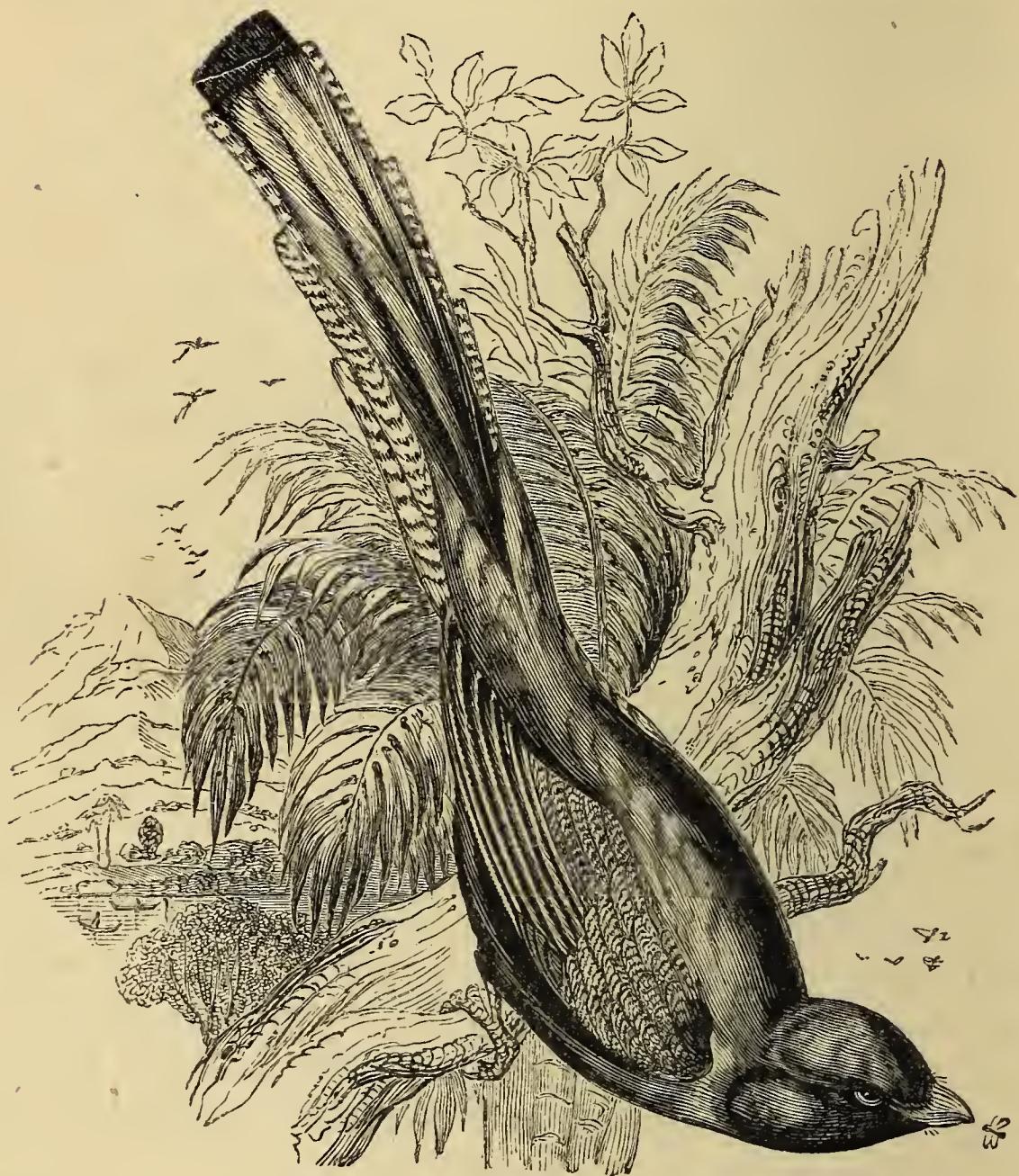
In some parts of its native country, the Green Tody is seen flying about very near the ground in the neighbourhood of the dwellings of man.

THE GRACEFUL TROGON.

ALL the birds of the Trogon genus are remarkable for the exceeding splendour and gorgeousness of their plumage. Some kinds inhabit the islands of the Indian Archipelago, but the Trogons proper are found in the warmest regions of South America, and especially in Mexico, where they were known and valued by the inhabitants long before the conquest of that country by the Spaniards. It was from the plumage of the Trogon family that the famous feather-work of the Mexicans, which excited the admiration and the cupidity of their conquerors, was made. The birds which supplied the feathers were accommodated in the royal menageries of ancient Mexico, where three hundred men were constantly employed in attending upon them, supplying them with food, taking care of their eggs at the period of incubation, and collecting and storing up their plumage for the royal use.

The Trogons are not gregarious, but are shy in their habits, preferring the deepest solitudes of the forest, where they select the darkest and densest retreats in the centres of umbrageous trees, seldom descending to the ground or even to the lower branches. They fly with a wavy kind of motion, never to any great distance, and pass their lives in the locality of their birth,

without migrating. They have no song, but during the breeding season utter a wailing kind of note resembling the syllables *pi-o*, which note is often heard with a melancholy effect as the male and female respond to each other. Their food is insects, which they catch with remarkable facility—not by chasing them



through the air, but lying in ambush for them, and seizing them as they pass. From their secluded lives and unacquaintance with man, these splendidly-clad birds are free from the suspicion of danger, and will often allow travellers to approach them closely and knock them down with a stick. They form their nests in the hollows of worm-eaten trees, enlarging the hollow with

their beaks and thus adapting it for their residence. The female lays two eggs, or, according to some writers, four ; and the young are born quite naked, though the feathers begin to appear within two or three days of their birth.

The Graceful Tropic bird, portrayed in our illustration, has the upper parts and breast a golden-green, and the lower parts rich scarlet ; a white crescent crosses the chest ; the outer tail feathers are white, minutely barred with black ; the secondaries and all the coverts of the wings are grey, delicately pencilled with black ; the forehead and throat are black, and the beak light yellow. It is a native of Mexico.

THE CAMPANERO, OR BELL BIRD.

THE Campanero derives its name from the extraordinary bell-like sound of its natural note, which may be heard in the evening at the distance of three miles, reminding the traveller by its solemn intonations of a bell tolling for the burial service. The home of this bird is in the forests of America, but very little is known of its habits, its nest having never been discovered, or even the localities ascertained in which it breeds. It is about the size of a common pigeon, and not unlike the pigeon in form ; it might indeed be mistaken for a pigeon, were it not for the singular horn-like structure which rises from its forehead to the height of three inches or more, and which it can erect or depress at pleasure. The plumage of the Campanero is entirely white, with the exception of this moveable horn, which is almost jet black, sparsely speckled with minute tufts of white down. The horn is connected interiorly with the palate and larynx of the bird, and probably aids in producing the peculiar tones of the voice.

In Waterton's "Wanderings in South America," the expressive cry of the Campanero is thus eloquently described :—" His note is loud and clear, like the sound of a bell, and may be heard at the distance of three miles. In the midst of these extensive wilds, generally on the dried top of an aged nuva, almost out of your



reach, you see the Campanero. No sound or song from any of the winged inhabitants of the forest, not even the clearly pronounced 'Whip-poor-Will' from the goatsucker, causes such astonishment as the toll of the Campanero.

"With many of the feathered race, he pays the common

tribute of a morning and evening song ; and even when the meridian sun has shut in silence the mouths of almost the whole of animated nature, the Campanero still cheers the forest. You hear his toll, and then a pause for a minute ; then another toll, and then a pause again ; and then a toll, and again a pause. Then he is silent for six or eight minutes, and then another toll, and so on. Actæon would stop in mid chase, Maria would defer her evening song, and Orpheus himself would drop his lute to listen to him, so sweet, so novel and romantic, is the toll of the pretty snow-white Campanero."

THE GREAT SPOTTED WOODPECKER.

THIS bird resembles the green or common Woodpecker in its habits, though it is not so frequently met with in this country. It is less in size than the green Woodpecker, measuring little more than nine inches in length. Its general colour is black and white, black being the ground colour, while the scapulars and lesser wing-coverts are white, and white spots are conspicuous on each side of the neck ; the throat and under-parts are also white. The under tail-feathers are crimson, and the male has a crimson patch on the back of the head, which patch is wanting in the female.

This bird frequents the woods and forests of this and other countries, rarely appearing in the vicinity of human dwellings. It lives, as all Woodpeckers do, by feeding on the insects found in or beneath the bark of trees, especially such trees as are in process of decay. It is often heard tapping the trees with its beak, when it is not seen ; nor is it very easy to get a sight of it, so careful is it to conceal itself. The tapping is exceedingly rapid, the blows following each other so fast as to produce a noise resembling the springing of a rattle. As the bird works away, the fragments of bark

fly in all directions, and from time to time it darts out its long tongue to search the crannies of the wood for the smaller insects, or seizes the larger ones in its beak. Sometimes the bird inserts its beak in a crack, and using it as a wedge, disturbs the loosened bark and



alarms the insects beneath, which, running out to escape, are devoured as fast as they appear.

Far from injuring trees by the holes they peck in them, it is pretty well known that the Woodpeckers really benefit them by removing the rotting wood, and freeing them from the hosts of wood-ants and other destroyers with which they would otherwise swarm. They do not, however, always confine themselves to

growing trees, but are equally partial to felled timber, particularly after it has lain long on the ground, where after a time the bark becomes infested with grubs, on which the Woodpeckers make a luxurious meal. They also seek for food in old posts, fences and rails ; and are specially fond of the wood-lice which are usually plentiful in old dry timber. In this country the Great Spotted Woodpecker is rarely seen in orchard or garden, but in some parts of America it preys upon the garden fruits to a great extent, and is consequently shot down by the garden proprietors.

Like all others of the genus, the Great Spotted Woodpecker makes no nest, but, cutting a hole in some decayed tree, which hole is just large enough to admit its body, it deposits its eggs, five or six in number, upon the crumbled fragments of decayed wood. The eggs are white and glossy, and marked with faint lines towards the small end. The young come out of the hole long before they can fly, and run about the tree, returning to the hole when hungry to be fed by the parents. The Woodpecker's nest, if nest it can be called, is filthy and ill-smelling beyond that of any other British bird.

THE TREE CREEPER.

THIS little brown bird is a common favourite, and is justly admired for its graceful form and rapid agile motions. It is hardly so large as a sparrow, and measures scarcely more than five inches in length ; its upper plumage is dark brown and white, with a light streak over the eyes ; the breast and under parts are buff-white ; the wings brown, tipped and barred with white and dull yellow ; the tail-feathers reddish brown. It has no song, but utters pretty continuously a feeble shrill "*cheep.*"

The Creeper lives upon the minute insects which are found on the bark of full-grown trees, and seems to pass its days in hunting them. It is seen to begin the search by alighting on the trunk of an oak or elm at the distance of two or three feet from the ground : creeping round the boll, it pecks and snaps up its small game with a continued motion of its slender beak, working its way spirally round the tree—appearing



now on this side, now on that, and occasionally stopping short for a few seconds. Reaching a large branch, it will speed along that in the same way, working now on the upper, now on the under side, clinging securely to the bark with its sharp claws.

On arriving at the subdivisions of the branch, it does not return, but flies from its perch to the base of another

tree, and there recommences the foraging process. This is its course of life both in winter and summer—the tree-bark apparently supplying all the food it requires.

The Creeper is often seen in gardens and orchards, where it takes little notice of any one, and is not readily alarmed by the presence of man: its indifference to observation has obtained for it its name "*familiaris*," though it never manifests any liking, but rather a total disregard to human society. It is one of the most solitary of our small birds, being never seen in the company of other birds, and but rarely in association with those of its own species.

Like some other small birds, the Creeper is exceedingly nervous, and can be so startled by sudden alarm as entirely to lose its self-possession for a time. Bird-catchers sometimes take advantage of this, by watching their opportunity, and delivering a heavy blow with stick or stone upon a part of the tree trunk to which the bird is clinging, and then pouncing upon it before it has recovered from its fright.

In the neighbourhood of dwellings the Creeper does not confine itself to trees, but is often seen running up old walls and buildings, and ransacking their crevices for its insect food. The nest of the Creeper is generally placed in some hollow tree, but now and then in a hole in a wall: it is composed of twigs and root fibres, scraps of bark and dried grass, and is lined with wool and feathers. The eggs are about seven or eight in number, and very small; they are of an ashen-grey colour sprinkled with light-brown spots.

THE WREN.

THE Wren, though never seen in cities and towns, is well known as one of the commonest and smallest of British birds. Its entire length is about four inches;

its colour is a rich warm brown, becoming lighter on the under parts of the body, and deepening on the quill-feathers of the wings and tail. Reddish brown spots are sprinkled on parts of the wings, and there are bars of the same colour on the tail-feathers.

The Wren builds its nest of leaves, moss, grass, and lichens ; and makes it with a dome on the top, the entrance being through a hole at the side ; and it is



always so artfully made as to resemble the substances, whatever they are, to which it is attached, and thus to escape observation. This little bird seems to have no partiality in the choice of a situation for its home ; it will build in trees, hedges, ricks, waterspouts, sheds, or in hollow trunks—and its nest has even been found in the inside of a pump, and in the dead body of an

animal. Sometimes the bird will begin three or four nests before finishing one, and often takes advantage of a situation in which it can make use of any projecting substance to form the dome. The hen generally lays about six or eight eggs, though nests have been found containing more than a dozen. The song of the Wren is sweet and tuneful, and is constantly heard along the hedge-rows during the early summer; and even, when the sun shines out, in winter, when nearly all other birds are silent, its under-voiced warblings will be heard. It never takes a long flight in the air, but haunts the copses and the hedge-rows, where it skips rapidly from branch to branch in search of insects and caterpillars. In winter-time it may be constantly seen in the leafless fences near the farmer's homestead, hopping rapidly along their entire length, and uttering its quick, short note of call "*chit ! chit !*" At this season it is glad to feed upon the crumbs thrown from the window, along with sparrows, and robins, and other dependents on the bounty of the kind-hearted. In the cold winter nights the Wrens join together in groups of six to a dozen, and all of them take refuge in one snug hole in a wall, or in an old tree, or under the eaves of a house, where they keep one another warm. Occasionally they occupy their old nests during the winter, and seven or eight full-grown birds have been found packed into one of these on a cold night: it is supposed that they were all members of the same family, driven by the cold to the shelter of their old home.

In this country the Wren is seldom persecuted by birds'-nesting boys, but, like the Robin, is allowed to go free, and bring up his family unmolested. The little bird owes his safety, in part, to an old rhymed tradition which threatens vengeance on any one who does him an injury. In Ireland, however, and the Isle of Man, the case is just the reverse: there, in consequence of some idle legends which are not worth relating, the rabble go out on the days before Christmas-day to hunt

the Wrens, and slaughter all they can, and on St. Stephen's day they carry about the dead bodies strung upon a branch of holly, and expect to be praised and rewarded for their cruelty.

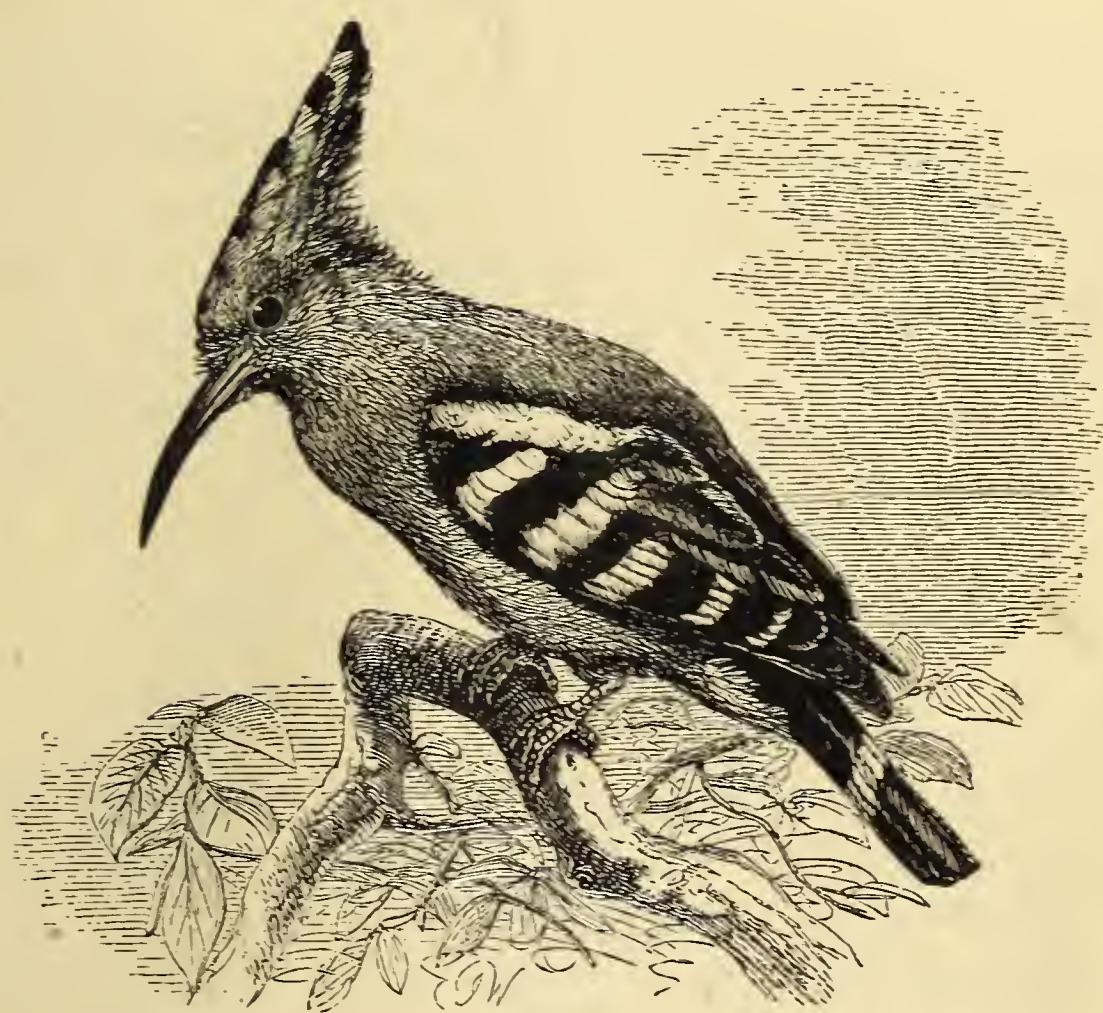
The Wren is called "the king of all birds," because, according to a very old fable, he got on the eagle's back when the eagle flew his highest—and when the royal bird was so tired that he could fly no higher, the Wren mounted a few yards higher, and thus beat him in the skyward race.

THE HOOPOE.

THE Hoopoe is a striking bird, remarkable for its handsome crest and long curved scimitar-shaped beak. It is almost thirteen inches in total length: the head, neck, and breast are purplish red; the back, wings, and tail are barred with black and white; the under parts white. The crest is formed of a double row of orange-red feathers, each feather being tipped with black. The male bird has a larger crest than the female, and his plumage is of a ruddier hue than hers.

This bird is an inhabitant of Northern Africa, of several parts of Asia, and of nearly the whole of Europe. It sometimes makes its appearance in England, but rarely in the northern parts, confining its visits mostly to Cornwall and the southern and eastern counties. Notwithstanding its rather formidable appearance, it has been observed to betray the utmost fear of birds of prey, shrinking and crouching to the ground, and covering its head with its wings when they approach. On the other hand, it is combative and pugnacious in the extreme with members of its own species, and is known frequently to fight in the most desperate manner, until the place of combat is covered with feathers torn off in the struggle.

The food of the Hoopoe consists of the smaller reptiles and various kinds of insects and larvæ. It is fond of cockchafers, caterpillars, grubs and beetles, and is most active in foraging for these latter and digging them out of their retreats. It is rather given to strutting in a dignified pompous way, erecting its crest from time to time. It has no song, but the male utters a cry in a soft tone resembling the syllables



“hoop hoop!” and which has been compared to the cooing of a dove; and it probably derives its name from this peculiar note. Its favourite haunts are low marshy grounds and lonely spots in the neighbourhood of woods, where the food it likes best most abounds.

The nest of the Hoopoe is built in some hole, either of a decayed tree or building, and is composed of dried grass and feathers, and contains from four to six eggs of a lavender-grey colour. The young appear in June; at

first they have but a short straight beak, which only grows to its full length and assumes its curved form when the birds attain their full size. The Hoopoe's nest is most offensive, from its foul condition, the parent birds taking no care in keeping it clean—though that is not the sole cause, the birds themselves secreting a substance most disgusting to our sense of smell.

Hoopoes are often kept in confinement, which they bear very well; and they manifest great attachment towards those who pet and feed them. If several are kept in one enclosure, they agree well enough together so long as there is no ground for contention, but will fight furiously for the possession of any dainty set before them. When fed with living creatures, such as meal-worms, cockchafers, &c., they first kill them, then beat them with their bills into a kind of pulpy ball, then toss them into the air, catch, and swallow them.

THE SUN-BIRD.

THE Sun-birds are very small and beautiful birds, inhabiting the Old World, and are stated by naturalists to represent the humming-birds of the New. They derive the name from the gorgeousness of their plumage, which gleams with peculiar brilliancy in the sun. Their food is the juice of flowers and the various insects found in the cups and on the petals of flowers; they usually perch when feeding, uttering at the same time a succession of sharp cries. The brilliant plumage for which they are remarkable is seen only on the male bird, the female being clad in comparatively sober hues; and further, it is only at the beginning of the breeding season that the male is in full dress; he loses his fine colours by the time the young are reared—his splendid feathers giving place to others of a dull brown.

The nests of the Sun-birds are made either in the hollows of trees or in the thick-set foliage of the forest underwood, and are generally concealed with great care.



They are skilfully constructed of the finest vegetable fibres and soft downy substances, and are artfully covered on the outside with lichens selected to match

the colour of the surrounding objects, so that they can with difficulty be discovered. Most of the Sun-birds are easily tamed, and become so familiar in confinement as to feed readily from the hand. Many of them sing sweetly, but their song is very feeble, though well sustained.

The Fiery-tailed Sun-bird, one of the most beautiful species, is a native of India, being common at the base of the Himalaya mountains. It is extremely small, not measuring more than five inches, fully half of which length is due to the tail. The head, neck, beak, and upper tail-coverts of the male are richly varied with brilliant blue, scarlet, and gleaming golden yellow. The long middle feathers of the tail are also scarlet ; the upper surface of the wings olive-brown, and their under surface greyish white. The female is a sober olive-green, shading to yellow in the under parts.

The splendid Sun-bird of our engraving is thus described by Sir W. Jardine : " The back of the neck, shoulders, and upper and under tail-coverts, are brilliant golden green, varying with every change of light ; the head and throat are steel-blue, in some lights appearing as black, in others as rich violet ; across the breast there appears, in most lights, a band of scarlet, but in some positions it appears as if banded with steel-blue, golden green, or violet, and at times to be almost entirely composed of one of these tints ; this is occasioned by the structure of the feathers : near the base the colour is of the metallic tints alluded to, but the tips of the plumules are lengthened into fine vermillion tops, without barbs, which are so slender as sometimes to be entirely lost when seen against the dark tint of the feather lying beneath. On the sides of this beautiful bird spring two axillary tufts of pale lemon yellow. The breast, belly, and flanks, wings and tail, are deep black, the latter edged with golden green. In this species also, the tail-coverts are of an unusual form, very nearly as long as the feathers of the tail ; the webs

very ample, loose, and unconnected. The legs, feet, and bill are black." This species inhabits the country about Sierra Leone: it was found also by Le Vaillant, during the breeding season, near the Fish River in South Africa.

Other species of Sun-birds are, the Collared Sun-bird, and the Greater Collared Sun-bird, both natives of Africa; the Javanese Sun-bird; the Goalporah Sun-bird; and the Malachite Sun-bird. This last-named bird is double the length of any of the other species; it inhabits the Cape of Good Hope, where it is a familiar favourite, frequenting the gardens and plantations often in flocks of considerable numbers. It derives its name from the Malachite-green of its rich dress, which has a velvety appearance, and, like velvet, presents different hues according to the position in which it receives the light — the slightest movement in the bird, even its breathing, causing changes of colour in the plumage.

THE HONEY-EATERS.

THE Honey-Eaters are an extraordinary group of birds, remarkable for their graceful shape and beauty of colour, chiefly confined to Australia, where they are found in great variety of form, and so numerous in species that new specimens are frequently met with. They live upon the sweet juices of flowers, which they collect with their long brush-like tongues, and upon the small insects found upon flowering plants and shrubs. In Australia there are many plants in blossom throughout the whole of the year, so that this family of birds are never deprived of their necessary food. They frequent those parts of the country where low shrubs are abundant, and show a marked preference for the different species of Banksias common in South Australia.

The New Holland Honey-Eater is perhaps the most numerous of the group ; it is a handsome bird, its whole body covered with black, white, and yellow colours in vivid contrast to each other. The top of the head is black, the sides being marked with streaks of white, one of which passes over each eye, and a



number of small white feathers cluster on the forehead. The body, wings, and tail are brown-black varied with yellow and white on the edges and tips of the feathers. The under parts are greyish white, splashed with black. The bird has no proper song, but a loud, clear, shrill cry.

This is one of the most familiar birds in the colonies of New South Wales, Van Diemen's Land, and South Australia, where it haunts the gardens of the colonists, and breeds and rears its young amongst them, and, by its bright plumage and active pleasing motions, adds much to the charms of the scenery. It is not very careful to conceal its nest, which is found in the gardens among the flowers and shrubs, and in the forest in some open bush at the height of but a foot or two from the ground. The nest is well and snugly built, of small twigs and sticks, dried grass, and fragments or strips of the bark of trees—the interior being lined with soft, woolly, vegetable fibre, gathered from the blossoms of plants. The female lays two or three eggs, of a pale buff colour speckled with brown, which is deeper at the larger end. Two or three broods are reared in the course of the season, that is, between August and January.

The Warty-faced Honey-Eater, figured in the engraving, is a gregarious bird; they are sometimes seen in flocks, constantly flying from tree to tree, particularly those known as the blue-gum, feeding among the blossoms by extracting the honey with their long tongues from every flower as they pass.

Other well-known species of Honey-Eaters are, the White-pinioned Honey-Eater; the Blue-faced Honey-Eater; the Garrulous Honey-Eater; the Bell Bird, whose note resembles the tinkling of a small bell; the Poë Bird, or Parson Bird, which is a native of New Zealand, and has rare imitative powers; the Friar Bird; and the Wattled Honey-Eater.

The Honey-Eaters vary in size from that of a lark to that of a large thrush or small pigeon.

THE FIRE-CRESTED TOURACO.



THIS brilliant bird is one of the group of Plantain-eaters, which are all natives of Africa, being common in the woods and forests adjoining the western coast of that continent. The Fire-crested Touraco is about the size of the common jackdaw, and is reckoned one of the most lovely of the species yet known. The crest,

which is large and full, is of a red hue ; the sides of the head, the ears, and the chin, as well as a patch round the eye, are white ; the eye itself is large, red, and brilliant ; the general plumage is green, inclining to bluish on the under parts ; the quill feathers are rich purple or violet ; the beak is yellow ; the feet greyish black. The long silky crest of this beautiful bird, when under any excitement, is elevated into a somewhat conical form, compressed at the sides ; and when erected imparts to the head the appearance of being covered with a helmet. In a state of repose the crest feathers fall down upon the head, and project behind.

The Touracos are valued on account of their rich plumage, and many specimens are found carefully preserved in museums ; some of them have lived for a considerable time in the gardens of the Zoological Society. Their food is entirely vegetable, and in their wild state they feed on plantains and other soft fruits, and live among the branches of the loftiest forest trees. They are not obtained either living or dead without some difficulty, owing to the cunning and caution they exercise for their own preservation. Even after they are wounded by gunshot, they are known to hide themselves so effectually as frequently to elude the most careful search of the gunner.

The White-crested Touraco—also a very handsome bird—is accounted the most wary and suspicious of the whole group ; and if the sportsman once cause it to take the alarm, he need hardly expect to get sight of it a second time. Like the squirrel or the woodpecker, the bird will glide round the trunk of the tree it is in, adroitly keeping always on the side which is screened from the sportsman's view ; or, if this resource should not avail, it will crawl along the branches, lying so closely to them that it cannot be distinguished from below ; and in flying from one tree to another its motions are so rapid as to baffle the best marksman.

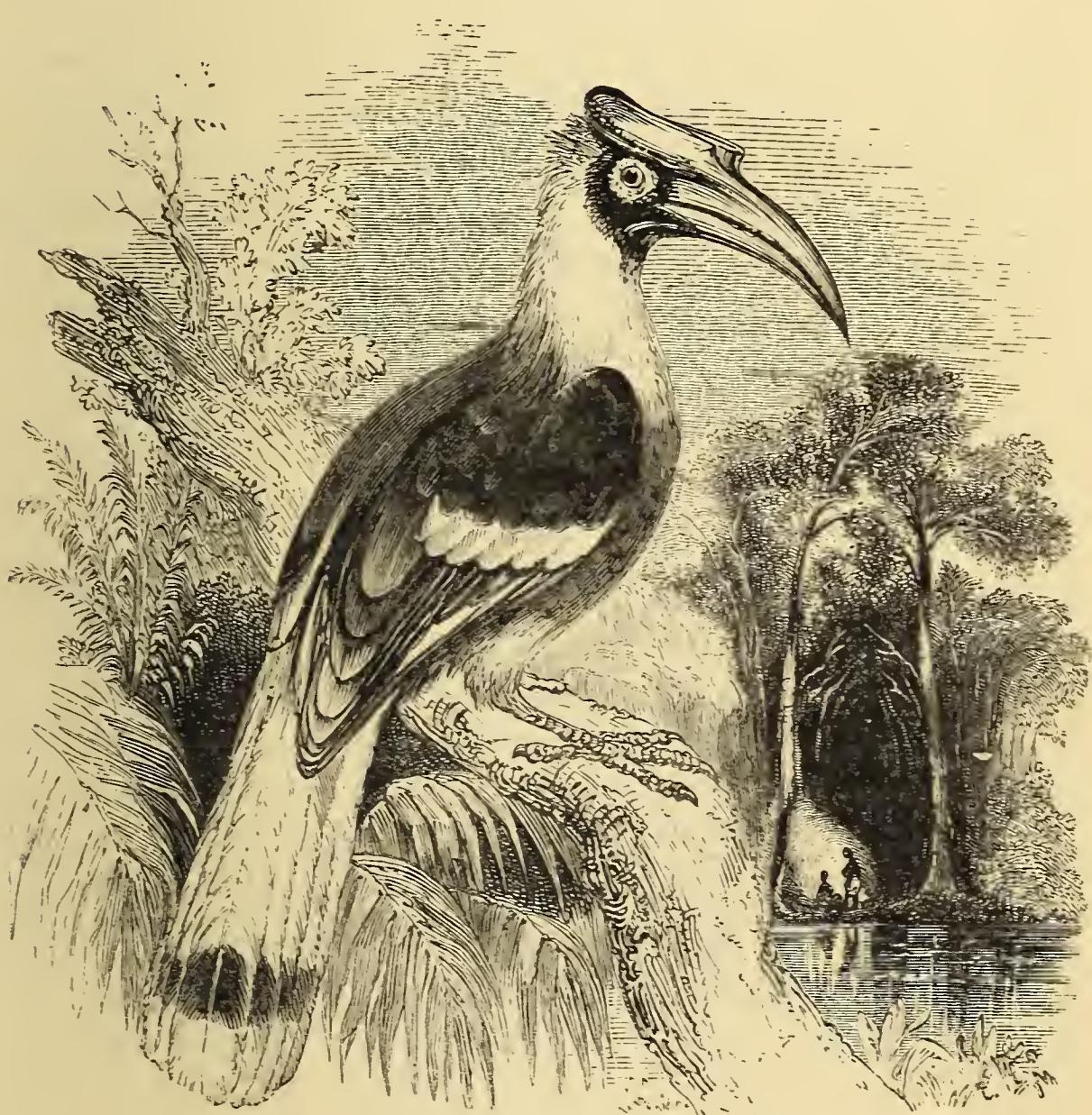
Sometimes the bird is known to follow the traveller for miles through the woods, screaming loudly all the while, but carefully keeping beyond the range of his gun.

The voices of the whole of the plantain-eaters are loud and disagreeable.

THE HORNBILLS.

OF all the strange forms to be met with among birds, the Hornbills are perhaps the most strange and startling. They are all distinguished by a monstrous beak surmounted by a kind of casque or helmet, which, in some species, equals in size the beak itself, and in others is so small as hardly to be noticeable. These huge appendages would seem at first sight too heavy for the bird to carry ; but in fact they are extremely light, being in their substance no thicker than paper, while, from their wonderful structure (which exhibits a series of delicate cellular arrangements not much unlike those of the shell of the paper nautilus), they are exceedingly strong. The beak and helmet grow with the age of the birds, being very small in the nestlings, but increasing in size as the birds get stronger. The large beak is useful to the Hornbill in obtaining its food, which consists both of animal and vegetable substances, and, according to some accounts, even of carrion ; but the utility of the helmet is not generally known. As, however, the larger Hornbills are given to make a prodigious roaring noise in their flights through the forest—a noise which has been described as resembling the approach of a tempest—it has been conjectured that the hollow helmet is one means of producing it, and, united with the clattering and clashing together of the broad mandibles, is the cause of the portentous sound.

The motions of the Hornbills, whether on the ground or in the air, are awkward and ungraceful: instead of walking, they hop, jump, and bound along; and their flights are performed by a hurried flapping of the wings, which, rapidly buffeting the air, add in no small degree to the discordant din produced by the means already mentioned.



Cuvier describes the Hornbills as eating every description of food; and Mr. Swainson records that, whatever they feed on, they first throw their food up in the air, and catch it before swallowing. They are gregarious birds; and they are found in various parts of the con-

tinent of Asia, in some of the Indian islands, and in parts of Africa.

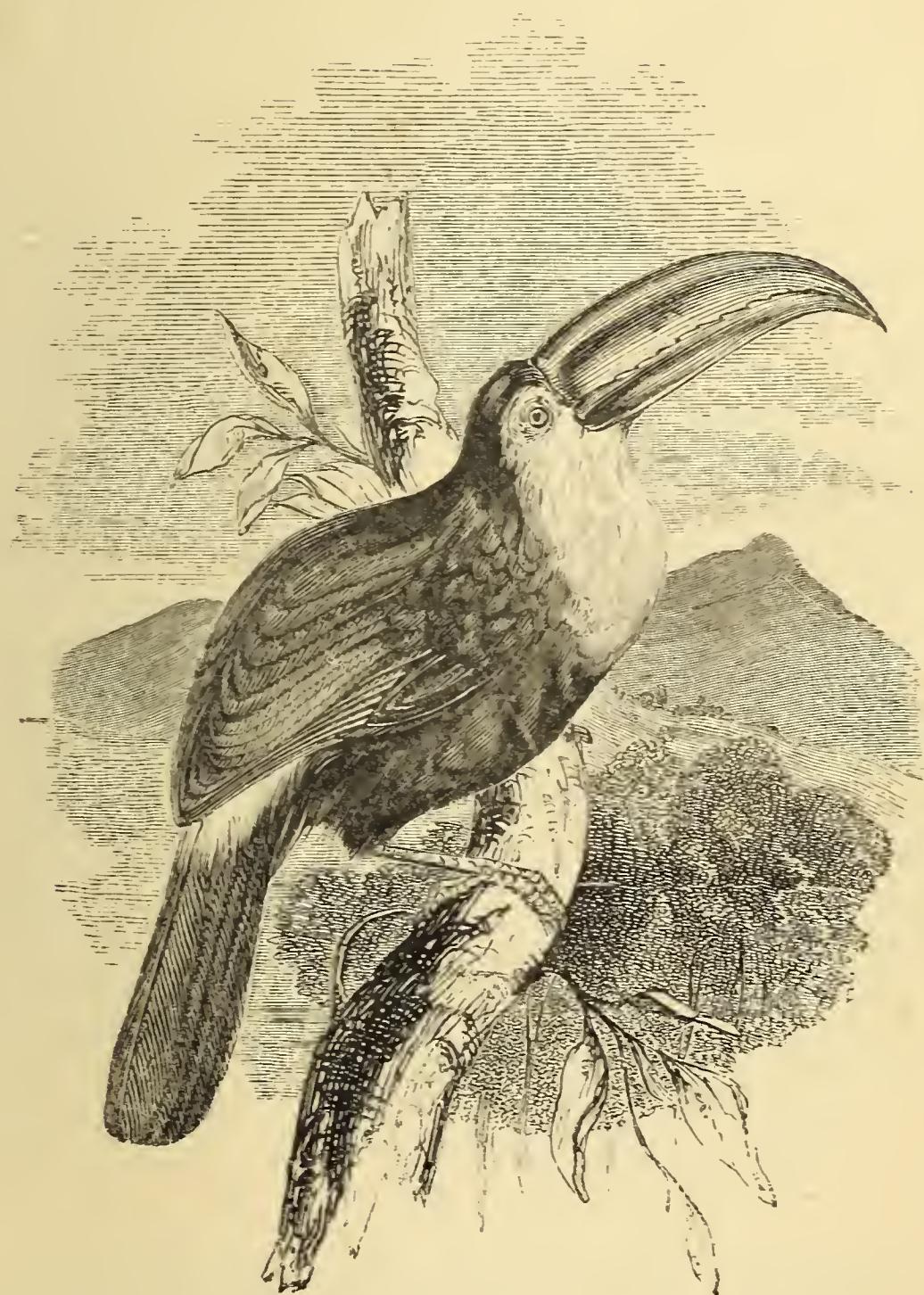
The Concave Hornbill, figured in the engraving, has the throat and face black ; the neck dirty straw yellow, the feathers of the nape greatly lengthened ; the body and wings black ; the quills and their coverts tipped with white ; the tail white, crossed with a band of black ; its coverts both above and below are also white. The feet are black, and the beak yellowish, inclining to scarlet at the tip. It is a native of India, the Himalayan mountains, Java, and most of the neighbouring islands. Its food consists of fruits, berries, flesh, and even carrion. One which was kept in confinement preferred animal food to all other kinds of diet.

THE KEEL-BEAKED TOUCAN.

THE Toucans are scarcely less remarkable than the hornbills for the extravagant size of their beak. There are many species of them, all being inhabitants of America, where they are chiefly found in the tropical regions. In point of splendour they are far superior to the hornbills, their plumage abounding in a variety of pure and brilliant tints, and surpassing that of most other birds in its rich and gorgeous display. The colours, however, are fleeting, many of them fading and disappearing from the plumage when the bird dies.

The beak of the Toucan, though so large, is, like that of the hornbills, thin and light, being composed of a number of honeycombed cells, and is no burden to its owner. It also shares in the gay colour of the plumage, its prevailing hues being yellow and red. The flight of the bird is free and rapid, but its walk on the ground is an awkward kind of hop, with the legs widely apart. In ascending trees it does not properly climb,

but mounts by a series of jumps from branch to branch, the movement being particularly elegant and graceful. Its voice is harsh and disagreeable ; and when a party of these birds join in one united cry, as they sometimes do, they may be plainly heard at the distance of a mile.



The food of the Toucans in their wild state is supposed to be chiefly vegetable ; though they are known at their breeding season to seek out the nests of the white ants, and, breaking them down with their huge beaks, to

devour the inmates wholesale. They are partial to the best fruits, and make fearful ravages among the oranges and guavas ; and they are therefore shot down without mercy by the cultivators, who in turn eat them, and find their flesh a luxury. In confinement the Toucan will eat almost anything, but shows a marked preference for young birds and mice, which it kills by crushing them in its beak, afterwards pulling them to pieces and eating them at leisure—testifying its satisfaction at intervals by the utterance of a peculiar clattering sound.

When it goes to roost, the Toucan acts differently to other birds. Settling on its perch, it doubles its tail over its back, and draws its head in between the shoulders. In this position it will remain for an hour or two between sleeping and waking, allowing itself to be handled, and even partaking of any food it is fond of without waking up ; but, when feeling the approach of sleep, the bird gradually turns its great bill over the right shoulder, and deposits it among the feathers of its back until it is almost or entirely concealed from view. Thus, when asleep, it nearly assumes the appearance of an oval ball of gay feathers.

Toucans make their nests in the holes of trees, where, according to an old writer, they make use of their formidable beaks to protect their young from the assaults of the monkeys. The female bird is of a smaller size than her mate, but is clad in plumage as gay and brilliant as his.

THE SULPHUR-CRESTED COCKATOO.

THERE are several species of Cockatoos, and they are found in great numbers in the islands of the East Indian seas and in Australia. The Sulphur-crested Cockatoo, which is a native of Australia, and abounds

especially in Van Diemen's Land, is the species which is most commonly known in England. It is a large bird, being about eighteen inches in length ; its plumage is white, with the exception of the crest, which is of a bright sulphur-yellow, and of the under-surface of the wings and portions of the tail-feathers, which are also



of a sulphur hue, but not so bright as the crest. In its native country it is found in great flocks, containing several hundreds in number ; and as it does great damage to the growing crops, it is hunted and shot without mercy by the cultivators of the soil. It makes its nest in the hollow of a decayed tree, and with its

powerful beak is able to enlarge its retreat by tearing away the surrounding wood. The food of the Cockatoo in its wild state consists entirely of fruits and seeds.

Owing to the ease with which they can be obtained, numbers of these birds are brought to this country, where they are well received, and indulged as pets in parlour and drawing-room. They are very teachable, and soon learn to talk, pronouncing with remarkable distinctness the words and sentences they know; they are also very affectionate, and will in an endearing manner caress and fondle those who are kind to them. On the other hand they are extremely jealous, and frequently become enraged when other favourites are preferred to them. On such occasions the offended bird erects its crest in a bristling manner and thrusts it forward, uttering at the same time a most discordant scream, and betraying its uneasiness by its restless motion. From jealousy they often imbibe a dislike to young children, and will attack them whenever opportunity offers. A Cockatoo with whom we have been some time acquainted had to be got rid of for assailing an infant in arms, who had supplanted it in its owner's regard. This bird talks freely to strangers as well as friends, challenges attention from all who enter the room, and will climb about them, rubbing their faces gently with the soft feathers of its poll, and asking to be kissed—imitating at the same time the sound of a kiss with its tongue and beak. Living on a perch, and not in a cage, its plumage is faultless, and its handsome crest in perfect condition.

The savage natives of Australia hunt the Cockatoos in a singular manner. First cautiously driving them together in one spot, and then scaring them into the air, they hurl their boomerangs among them, and fell them to the ground. They also take advantage of the attachment these birds have for each other, by fastening a wounded one to a tree, and then killing others who, moved by its cries, hasten to its assistance.

THE CARRIER PIGEON.



THE several varieties of domestic Pigeons, which are very numerous, and comprise the Carrier Pigeon among them, have all been bred and reared, by the careful management and cunning of breeders, from one single stock—the Rock Dove being the ancestor of them all. This bird is common in most parts of Europe, on the Mediterranean coasts, and in the north of Africa. It is about a foot in length; the head and neck are grey, the chin blue grey, and the throat green or purple according to the point from which it is viewed. The upper parts of the body are warm deep grey; the greater

coverts are barred with black at the tip ; the tertials are also tipped with black—thus two black bars cross the wings ; the lower part of the back is white, and the breast, abdomen, and upper tail-coverts are grey.

It appears to have been known from the old historic periods that Pigeons have a marvellous faculty of finding their home when carried to a great distance. Some attribute the faculty to pure instinct, while others, apparently with more reason, ascribe it to strong powers of sight, and the observation and memory of the bird —citing in support of their opinion the fact that Pigeons often lose themselves in foggy weather, and sometimes fail to come home when the earth has become covered with snow during their flight. This opinion is supported by the fact that the Pigeon does not set off in a direct line, but by constantly widening circles, or rather a spiral. However this may be, we know that Carrier Pigeons have been in use for thousands of years, and that the art of training them as messengers must have been practised from the earliest periods of civilization. We know that they were used among the ancient Greeks, for Anacreon mentions them in one of his Odes as the bearers of epistles ; and Taurosthenes, a victor in the Olympic Games, sent off by a Pigeon the news of his success to his father, who resided in Ægina. Pliny in his Natural History speaks of Pigeons as messengers cleaving the air. The Crusaders employed them, and both Tasso and Ariosto make mention of them in their poems. Sir John Maundeville, who penetrated into China in the reigns of our Second and Third Edward, has the following curious passage :—“ In that contree and other contrees beyonde thei han a custom, whan thei schulle usen werre, and whan men holden sege abouten cytee or castellie, and thei withinnen dur not senden out messagers with lettere fro lond to lond, for to aske sokour, thei maken here letters and bynden them to the nekke of a Colver, and letten Colver flee ; and the Colveres ben so taughte that thei flean with

the letters to the very place that men wolde send hem to. For the Colveres ben norysscht in the places where thei ben sent to ; and thei senden hem thus for to beren here letters. And the Colveres retournen azen where as thei ben norisscht, and so they dou comounly."

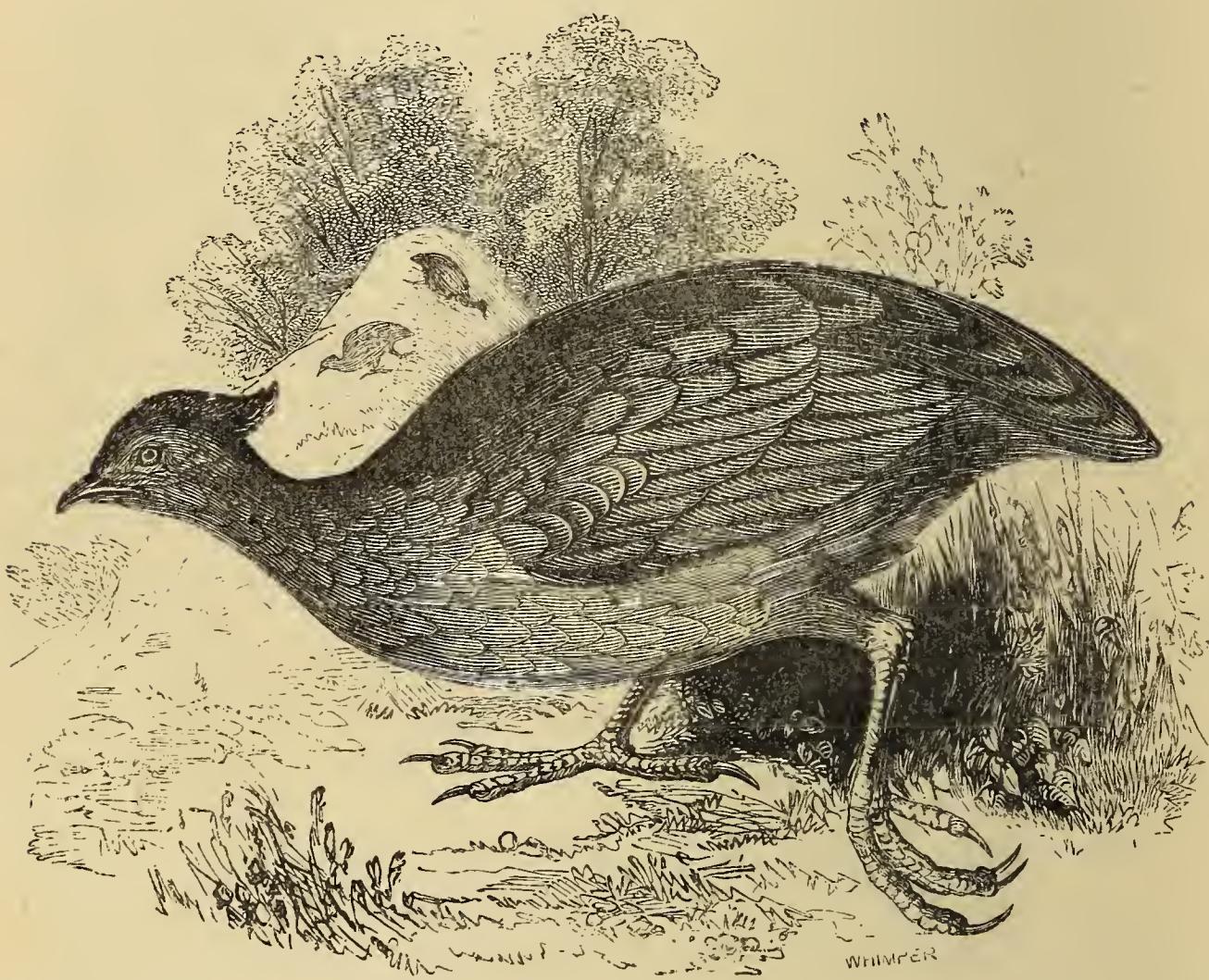
In our own country the Carrier Pigeon has been in use for some centuries, but not, so far as appears, in any very honourable office ; it was long employed as the messenger from the race-course and the prize-ring, and we see it in Hogarth's print flying off from Tyburn with the news of the felon's death. Since the discovery of the electric telegraph, the despatch by birds has fallen into abeyance, and their numbers have greatly diminished.

Domesticated Pigeons are astonishingly fertile. Although they produce only two at a brood, they will hatch nine times in a year ; and it is found on calculation that a single pair may, in four years, be the parents of 14,760 young.

THE MOUND BIRD.

THE Mound Bird, better known as the Jungle Fowl, is one of the family of Megapodidae, or large-footed birds, so called from the size and strength of their feet. The Jungle Fowl is found in several parts of Australia, and especially in the neighbourhood of Port Essington, where it was first observed by Mr. Gould, who has given the most complete account of it. It is about the size of a common English fowl, and its colours are plain and unpretentious ; the head is brown, the back of the neck dark grey, the back and wings yellowish brown, deepening into chestnut on the tail-coverts. The under parts are a deepish grey ; its bill is rusty brown, and its large feet and claws are orange. It is not a social

bird, but resorts to the dense thickets in the neighbourhood of the sea, and is never seen inland save in the neighbourhood of rivers and creeks. When met with it is either in pairs or quite alone. It gathers all its food from the ground, devouring large quantities of seeds, berries, insects—particularly the larger beetles, and the roots of plants. Its powerful claws enable it



to tear and rake up the soil with great rapidity, and thus lay bare to view whatever nourishment it may contain.

The most remarkable peculiarity of this bird is the singular measures it resorts to in preparation for the business of incubation. This it does by selecting a spot in the forest well shaded by trees, or on the shore under covert of trees or rocks, and there raking together a

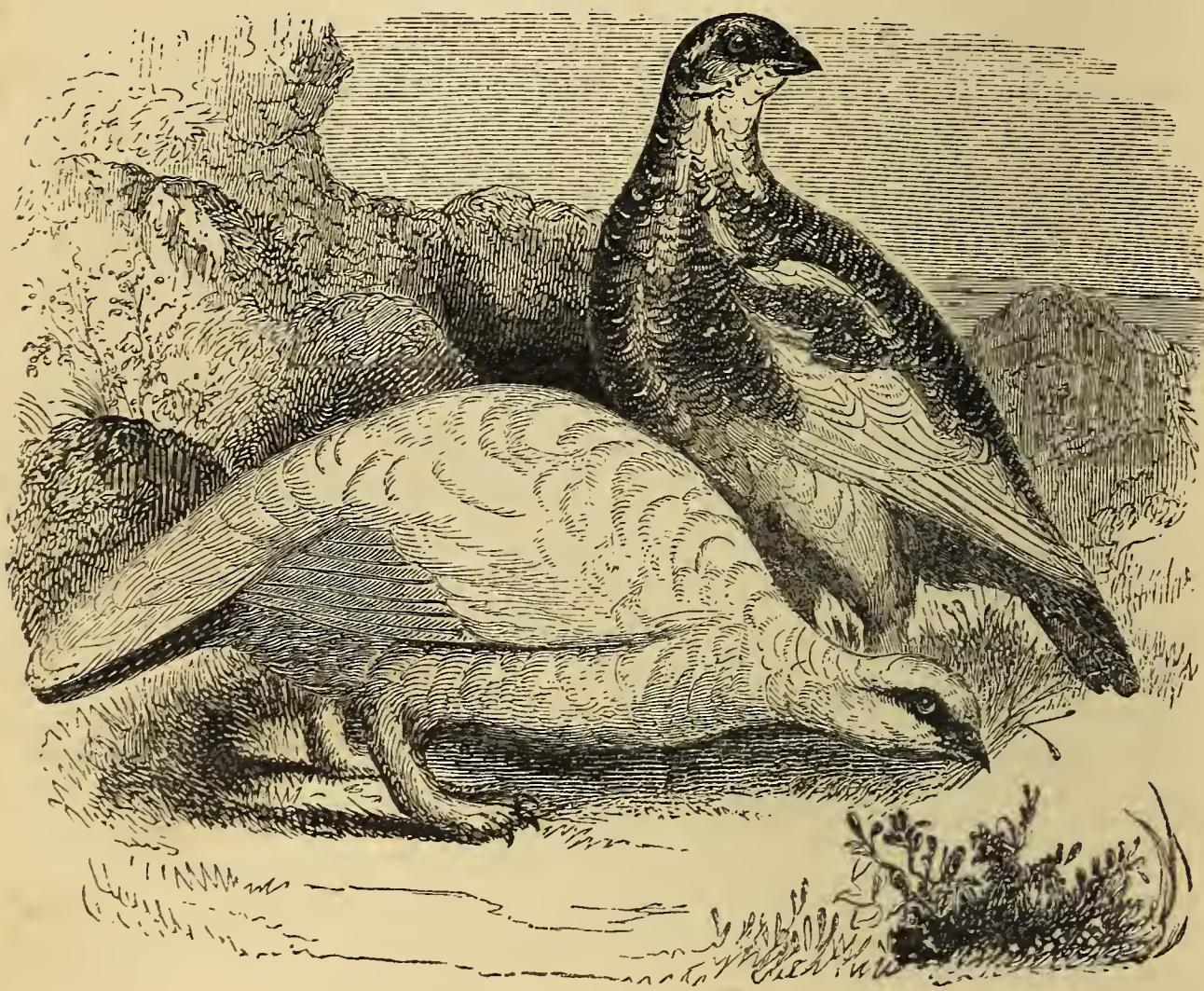
huge mound of mingled earth, sand, and decaying vegetable matter. So large are these mounds that they were mistaken by the first European visitors for the sepulchral tumuli of the natives, and they were so described in their books of travels. Some of the mounds measure as much as sixty feet in circumference, and fifteen in height. In these the hen bird deposits her eggs,—not to sit upon them as most other birds do, but in order that they may be hatched by the heat of the fermenting mass of the mound. The eggs are laid each in a separate hole, some of them near the top, others at a considerable distance from it. The hen burrows in the mound to deposit her eggs, but always takes care that they shall not be more than two or three feet from the outer surface of it—probably with an instinctive view to the extrication of the young when they are hatched. The eggs are enormously large in proportion to the size of the bird that lays them, and are white, but become soiled and dirty from the rank mass around them. The natives often dig them out for food, but do not succeed in finding them without considerable labour and toil. The young birds show remarkable strength of limb, and are soon able to provide for themselves. The flesh of the Jungle Fowl is said to be excellent for the table.

THE PTARMIGAN.

THE Common Ptarmigan, the smallest of the British grouse, is found in the northern parts of our island throughout the year: it is common also in the northern countries of Europe, and in the high mountain regions where snow prevails in summer. The adult male is about fifteen inches in length; its plumage in winter is entirely white with the exception of a small black patch

behind the eye, and the shafts of the primaries and bases of the outer tail-feathers, which are also black. In the summer the black remains unaltered, but the white becomes mottled and barred with black and grey. The female has less black about the eye than the male.

Ptarmigans pair and build early in the spring, forming their nests in hollows of the ground, of dried



grass and twigs; the eggs are from seven to twelve in number, and are of a warm yellow colour spotted with brown. The young run about as soon as they are hatched, and are carefully guarded by the mother; their food is the tender sprouts of heath and other mountain plants, berries, and seeds. They run about while feeding, and when alarmed are slow to take flight, but rather avoid discovery by crouching in perfect silence.

on the ground, where, from their plumage resembling so closely the colour of the soil, it is difficult to distinguish them ; and a person may even walk through a whole flock without seeing a single bird. According to Mr. M'Gillivray, "when squatted they utter no sound, their object being to conceal themselves ; and if you discover the one from which a cry has proceeded, you generally find him on the top of a stone ready to spring off the moment you show an indication of hostility. If you throw a stone at him, he rises, utters his call, and is immediately joined by all the individuals around, which, to your surprise, if it be your first rencontre, you see spring up one by one from the bare ground."

Early in the season the coveys of Ptarmigans unite in large flocks, and while thus congregated they perform their migrations from the higher mountainous districts to the milder climate of the valleys. A flock seen in flight has a curious and puzzling effect when passing along a mountain side—their speckled forms being barely visible as they fly, and vanishing altogether from view, as if by magic, the instant they alight. They appear to take no lengthened flights, and it is doubtful whether they cross the sea. In Scotland Ptarmigans seem to be equally abundant all the year round ; but they are by no means so plentiful or so generally diffused as the grouse. They are not met with in Ireland, or in Wales, or in the north of England.

THE APTERYX.

THIS, the strangest in appearance of all birds, has scarcely any trace of wings, and from this deficiency it has derived its name, which signifies "wingless." It is a native of Australia and New Zealand, and by the inhabitants of those countries it is called the Kiwi-kiwi,

on account of its peculiar cry. It is about the size of a common fowl; and in colour it is a chestnut brown, the tips of the feathers being almost black; its feet are large and strong, and it can run with great rapidity. It feeds on snails, insects, and especially on worms, which it reaches in their underground haunts with its long beak; it always feeds in the night, remaining con-



cealed in the fern and underwood during the day. Its beak is of extraordinary length, and it is curved at the end, and the nostrils, which are small and narrow, are at the tip. The natives always hunt this bird by night, carrying torches with them; it is valuable to them on account of its skin, which is tough and very pliant, and which is made into mantles for the chiefs, by whom they are much prized. When the Kiwi-kiwi finds

itself pursued, it takes to flight, and runs almost with the speed of an ostrich, and when hard pressed by the dogs it will dig a hole for itself in the ground, or hide in some cavity of the rocks. When attacked it shows considerable courage, defending itself bravely.

Not many years ago the Apteryx was thought to be a fabulous creature, and its existence was denied by scientific men. Now, however, there are not only many stuffed specimens in the museums of this country, but there is one living in the Zoological Gardens. This bird laid six eggs between the year 1852 and 1861 ; the eggs are of an enormous size for so small a bird ; they measure four and three-quarter inches in length, and the weight of a single one is nearly one-fourth of that of the bird itself. She is very shy, and remains hidden behind the straw in her box in the daytime, and if taken out of it to be exhibited, will run back again the moment she is released.

The Kiwi-kiwi was formerly very common in New Zealand, but is now becoming scarce ; and it is supposed that, but for its shy disposition, and its habit of coming out of its hiding-place only in the night, it would have been extinct long ago.

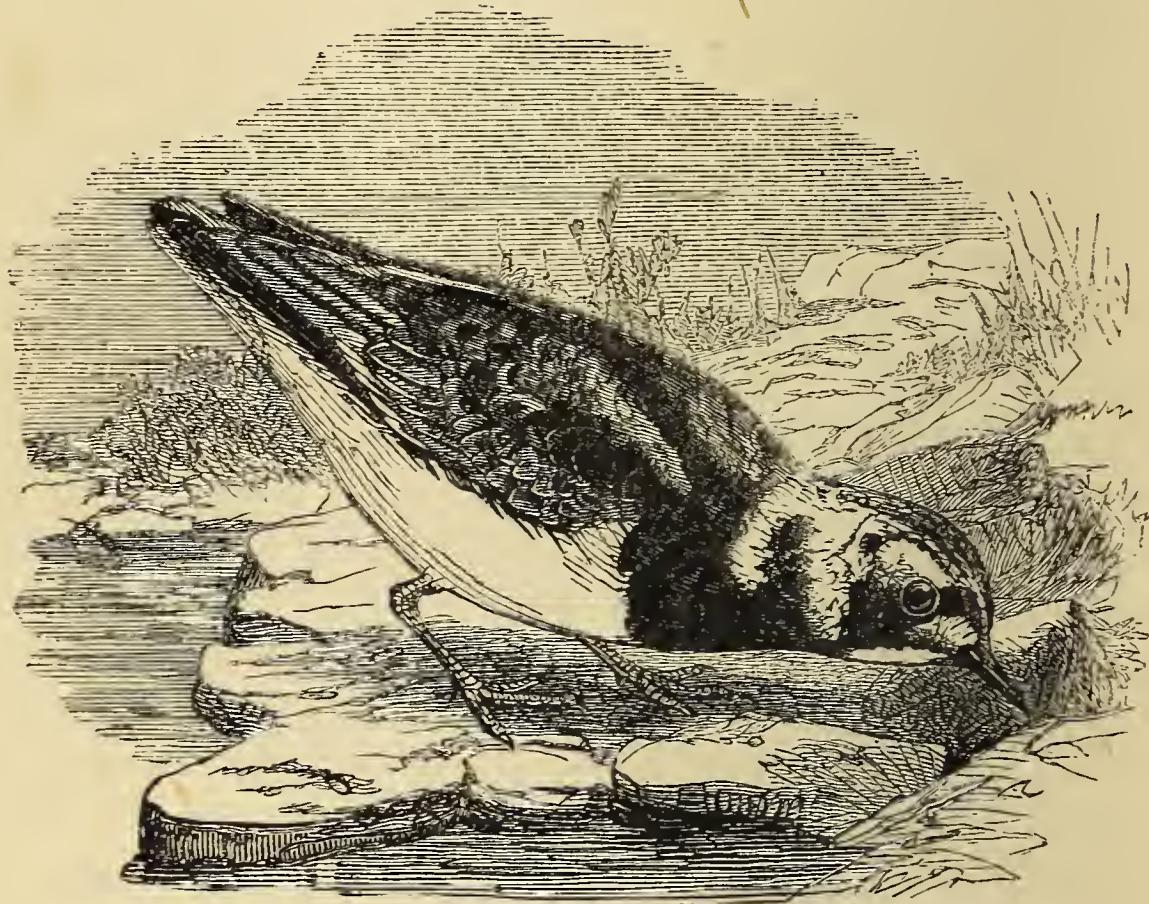
Two other species of the Apteryx are known besides the one above described ; these are Owen's Apteryx and Mantell's Apteryx ; and it is supposed that there are other species in existence yet unknown.

THE TURNSTONE.

THE Turnstone visits our shores every year, arriving here about the beginning of August, in separate small parties, each of which is supposed to constitute a family. It is a conspicuous bird owing to its striking colours, and is easily recognised, but its habits are shy, and it is

not so easily approached. It is about nine inches in length ; the top of the head is white streaked with black ; the upper parts of the back, scapulars, and wing-coverts, are rusty brown, spotted with black ; the rest of the plumage is variegated with black and white, and the legs and feet are ruddy orange.

This bird derives its name from its habit of turning over the stones, shells, and other matters which lie on



the coast, in search of food. It is rapid and active in its movements. Audubon, who had the rare opportunity of watching a party of Turnstones feeding within twenty yards of him, thus describes their proceedings : "I was delighted to see the ingenuity with which they turned over the oyster-shells, clods of mud, and other small bodies left exposed by the retiring tide. Whenever the object was not too large, the bird bent its legs to half their length, placed its bill beneath it, and with a sudden quick jerk of the head pushed it off, when it

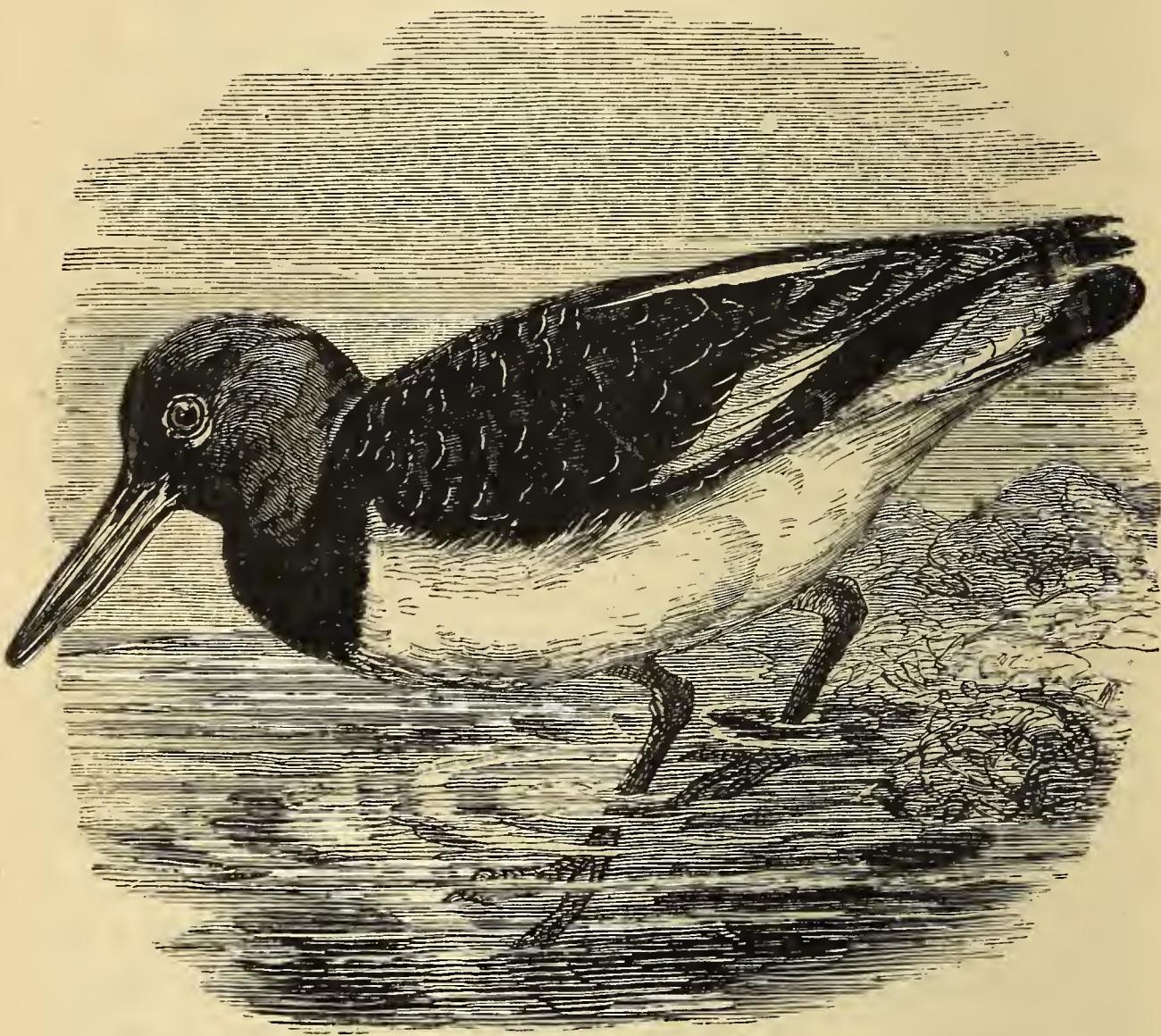
quickly picked up the food which was thus exposed to view, and walked deliberately to the next shell to perform the same operation. In several instances, when the clusters of oyster-shells and clods of mud were too heavy to be removed in the ordinary way, they would not only use the bill and head, but also the breast, pushing the object with all their strength, and reminding me of the labour which I have undergone in turning over a large turtle. Among the sea-weeds that had been cast on shore, they used only the bill, tossing the garbage from side to side with a dexterity extremely pleasant to behold . . . I saw four Turnstones examine almost every part of the shore along a space of from thirty to forty yards."

These birds do not breed in this country, and nothing was known of their habits in the breeding season, until Mr. Hewitson, while exploring the coast of Norway, succeeded in finding their nests in a situation where he would never have expected to meet with them. The first he fell in with "was placed against a ledge of rock, and consisted of nothing more than the drooping leaves of the juniper-bush, under a creeping branch, by which the eggs, four in number, were snugly concealed, and admirably sheltered from the many storms by which these bleak and exposed rocks are visited, allowing just sufficient room for the bird to cover them. The several nests that we examined were placed in the same situation as the one described, with the exception of two, one of which was under a slanting stone, the other on the bare rock ; all the nests contained four eggs each. Their time of breeding is about the middle of June. The eggs measure one inch seven lines in length, by one inch two lines in breadth, and are of an olive-green colour, spotted and streaked with ash-blue and two shades of reddish brown."

The Turnstones are spread over a considerable part of the world, having been observed as far north as Greenland, and as far south as the Straits of Magellan.

This bird is known in North America under the name of the Horse-foot Snipe, from its feeding on the spawn of the king-crab—popularly called the horse-foot crab.

THE OYSTER-CATCHER.

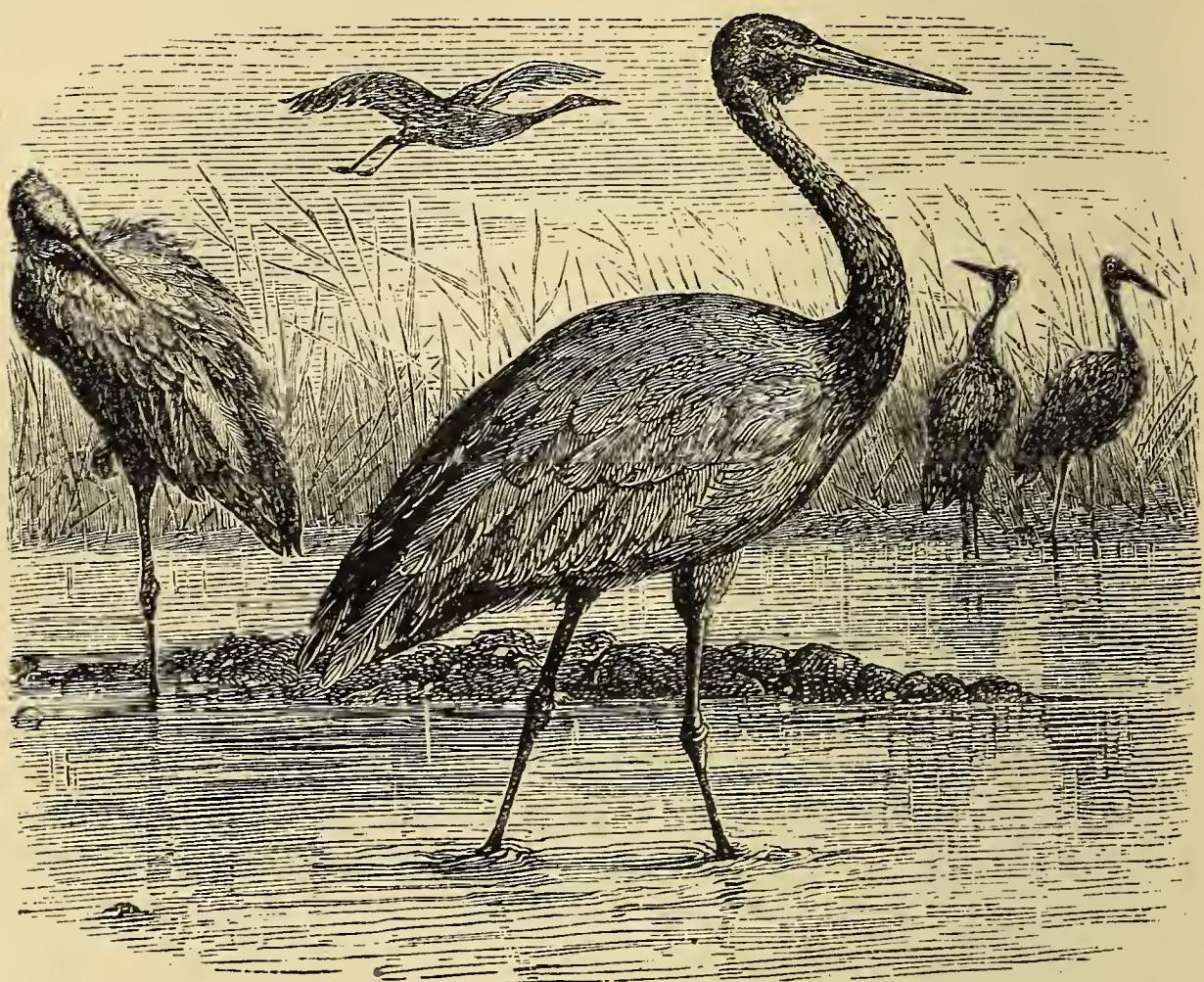


THIS bird bears considerable resemblance to the magpie in the contrasted white and black of its plumage, which resemblance has obtained for it the name of the Sea-Pie. The head, nape, upper part of the breast, scapularies, quill-feathers, and extremity of the tail, are deep black, and the remainder of the plumage white; the bill is curiously flattened sideways, terminating in a

kind of wedge, and is a bright orange colour, deepened to a ruddy hue at the base. The haunt of the Oyster-Catcher is the sea-shore, where it feeds, when the tide is low, upon mussels, limpets, and molluscs, striking off the limpet from the rock with a sudden blow of its wedge-like beak. It explores the sandy bays and small creeks, and forages among the half-submerged rocks, devouring numbers of sea-worms, crustacea, and small fish left in the salt pools by the subsidence of the sea. When the tide returns and covers the shore, the Oyster-Catchers are seen to fly off inland, but not to any great distance, generally betaking themselves to the nearest flats or salt-marshes, or else to low-lying meadows, to feed upon the insects or slugs. It is very rarely that they are met with at any great distance from the sea coast. They are swift of foot and good swimmers, and will frequently take to the water after food. Their flight has been compared to that of the duck. They abound on the flat sandy coasts of Lincolnshire, and are plentiful also on the Norfolk coast; but are more numerous in both these localities in winter than in summer, and the more severe the winter is, the greater are their numbers.

The Oyster-Catcher's nest is usually nothing more than a slight hollow made in the shingle above high-water mark; but where there is no shingle, and they have to make their home in the rock, they form a rude nest by means of grass and sea-weed. They lay three or four eggs of a dull yellow colour, spotted with brown and grey. The young are covered with a soft down, and are able to run soon after breaking the shell.

THE NATIVE COMPANION.



THIS is a graceful and elegant bird, and is found widely scattered over the colony of South Australia. Mr. Bennett, in his "Gatherings of a Naturalist," gives the following account of it: "Its flight is easy and graceful; it is soon domesticated, and struts about even in crowded streets, perfectly tame, readily feeding from the hand. It lays two eggs on the bare ground, principally about sedges and reeds on the borders of a lagoon or marsh. The eggs are of a cream colour, blotched all over, particularly at the larger end, with chestnut and purplish brown, the latter colour appearing as if beneath the surface of the shell. This bird stands about four feet high, and when fully erect, a few inches more. It is of a dark brownish grey, with silvery-grey edges over the back; crown of the head and bill olive green; eyes fine orange yellow; over the head and down the neck,

raised fleshy papillæ and caruncles, of a bright coral red ; legs and feet purplish black. The sexes are alike in colour, but the female is smaller than the male. Its food consists of lizards, insects, frogs, and bulbous roots ; in confinement it requires a good supply of meat.

“ In some parts of the colony these birds are very numerous, and, when in a flock together, it is amusing to watch their various antics. They will pirouette about like opera dancers, as if getting up a ballet. They figure away, devoting all their energies to dancing and jumping, twisting and throwing up one leg in a most graceful manner ; then they will tumble upon the ground, with the feet uppermost, and finish by rolling about like a dog.

“ When two or three fly together, they generally follow in a line ; but when numerous they appear to have a leader, whose movements they invariably follow, sometimes forming two groups like the letter V reversed ; they fly to a great height, appearing like specks in the sky.

“ . . . This bird is a good ‘watch-dog,’ giving its shrill trumpeting note of alarm on the approach of a stranger ; this, I observed, often occurred with some tame specimens kept in the grounds of the Australian Museum. When a visitor approached the enclosure . . . in which they were promenading, they would rush up sometimes as if to attack the intruder, with wings spread and beak open ; and no notice being taken of this menace, they would pirouette round, as if inviting him to take part in a quadrille. These birds, by aid of a good glass, may be seen performing their dancing and other antics in their native marshes—not, as many suppose, for ostentation and display, but as an amusement and recreation among themselves.”

A pair which had become perfectly domesticated, so far attracted the notice of a pair of wild ones, “as to induce them to settle and feed near the house, make acquaintance with the members of the establishment,

and, becoming still tamer, to approach the yard, feed from the hand, and even to follow the domesticated birds into the kitchen, until a servant imprudently seized one of the wild birds, and tearing a handful of feathers from its back, the wildness of its disposition was roused, and darting forth, followed by its companion, it mounted in the air, soaring higher and higher at every circle, at the same time uttering its hoarse call, which was responded to by the tame birds below." For several days the wild birds returned and performed the same evolutions, without alighting, "until the dormant impulses of the tame birds being aroused, they also mounted high in the air, winged their way to some far distant part of the country, and never returned to the home where they had been so long fostered."

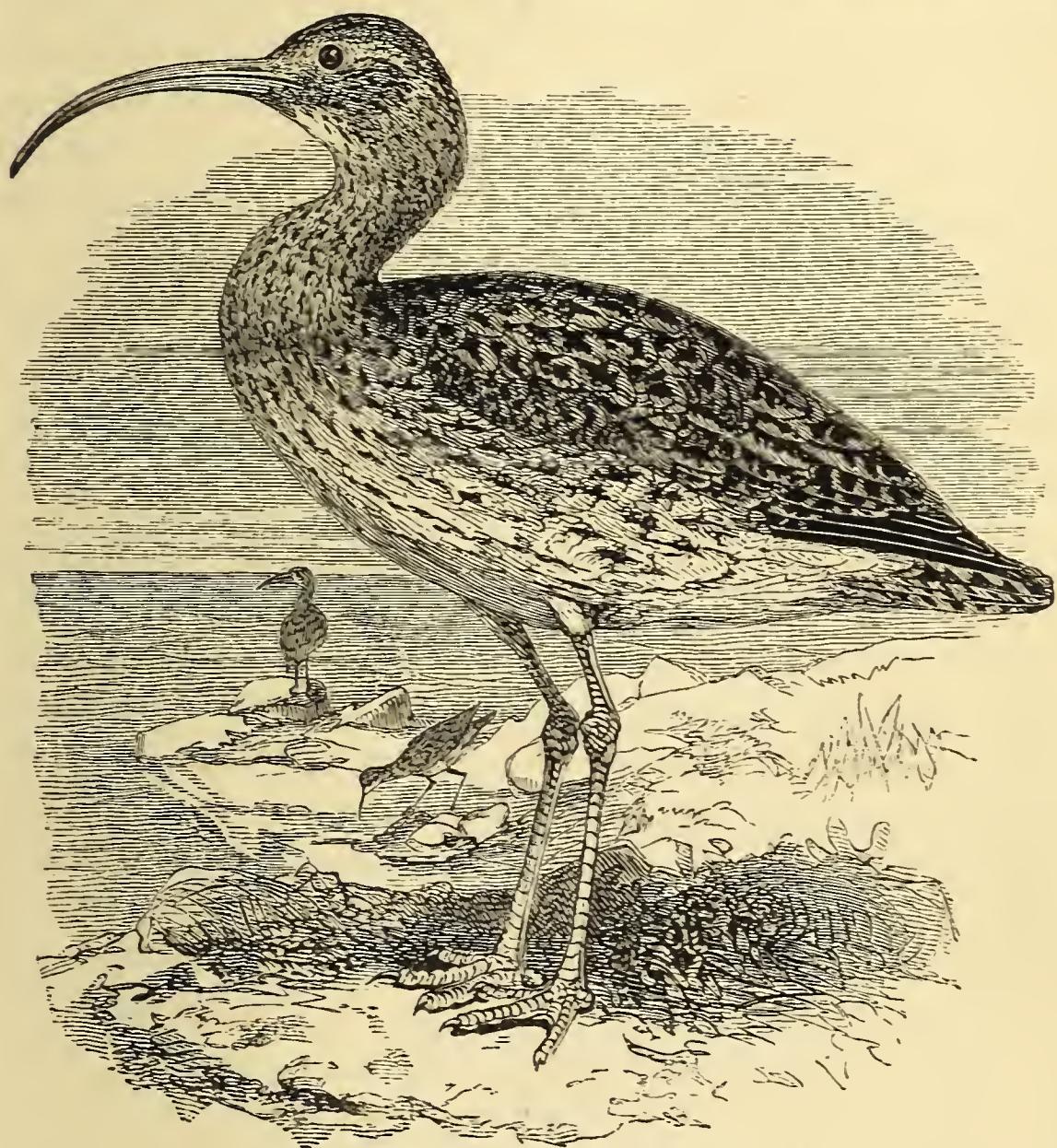
THE CURLEW.

THE Curlew is a bird well known, at least by its note, (a loud whistle of two syllables, bearing a supposed resemblance to its name,) to dwellers on the sea-side, which it frequents at low water in search of food. Its length varies from twenty to twenty-eight inches, and its general colour is a reddish ash, mottled with dusky spots. The under parts are white, streaked with brown ; the feathers of the back are black, bordered with rust red ; the tail white, with dark brown transverse bars.

Curlews feed on those portions of the shore which are uncovered at the reflux of the tide to some considerable distance sea-ward, and which abound in worms and small crustaceous animals. At the return of the tide the birds retire to the adjacent moors or marshes, or forage for worms, snails, and grubs, in the meadows—preferring those where the grass is high, awaiting the scythe of the mower. They are much prized by sportsmen, but are extremely difficult to shoot from their

wildness and shyness, and the care with which they keep beyond the reach of shot.

From the middle of autumn to the beginning of spring, Curlews inhabit the neighbourhood of the coast, and they may be seen when the tide is going out, flying in wedge-shaped flocks in a straight line towards their



feeding-grounds—the broad salt ooze which the ebb has just laid bare ; if alarmed, they utter a wild warning cry, which has the effect of turning the following flock, who respond to the cry, from the course they are taking. At the approach of the breeding season they retreat inland, to lone heaths, high hills, or tracts of marshy boggy ground. In such retired places they make a shallow nest of dry leaves or grasses, scraped together

under a raised turf or sheltering clod of earth. The eggs are generally four, much larger at one end than at the other, of a brownish-green colour, blotched and splashed with darker hues of the same, and always placed in the nest with their small ends together. If the female is disturbed while sitting on her eggs, she endeavours to entice the intruder from the neighbourhood of her nest by pretending to be disabled—partly flying and partly scrambling along the ground, with one wing drooping as if wounded. The young are able to run about soon after they are hatched, but are not fledged until after the lapse of several weeks.

THE COMMON SNIPE.

THE Snipe is found in all parts of the old world, from the most northern to the most southern latitudes; and it is common also in many parts of America and many of the American Islands. All over Great Britain it may be found wherever there are damp, marshy, and swampy grounds, but is much more numerous in winter than in summer, owing to the arrival of numbers from colder regions, whence they are driven by the severity of frost. For as the Snipe lives by probing the moist ground and the muddy bottom of shallow waters with its bill in search of the worms and creeping things that lurk there, it can find no sustenance in places where the swamps and fens are frozen hard, and must perforce take itself elsewhere. The Snipe is between ten and eleven inches in length; its colouring is a varied and graceful mixture of blackish brown, white, and grey, which, from the commonness of the bird on the poulters' stalls, must be familiar to everyone, and need not be more particularly described.

The habits of the Snipe are curious, and in some degree puzzling. The male is often seen to rise high

in the air with a rapid circling flight, uttering the while its peculiar cry of "chick, chick," often repeated; then he falls suddenly with a kind of thrumming noise thought to resemble the bleating of a goat, and which in France has obtained for him the name of *Chèvre volant*, flying goat—then mounting again, and again descending, he will utter his call "chick, chick," simul-



taneously with the strange thrumming sound, so that both are heard together. This latter sound is probably produced by the impulse of the air on the wings of the bird as it descends. Great numbers of Snipes are shot every season, as their flesh is deservedly prized for its flavour. When disturbed by the sportsman in their feeding-grounds, they rise to a short distance almost

vertically, and turn about in different directions as if uncertain which way to go, but invariably end by darting off with great velocity against the wind: their quick motions and sudden swoop to windward often baffles the sportsman.

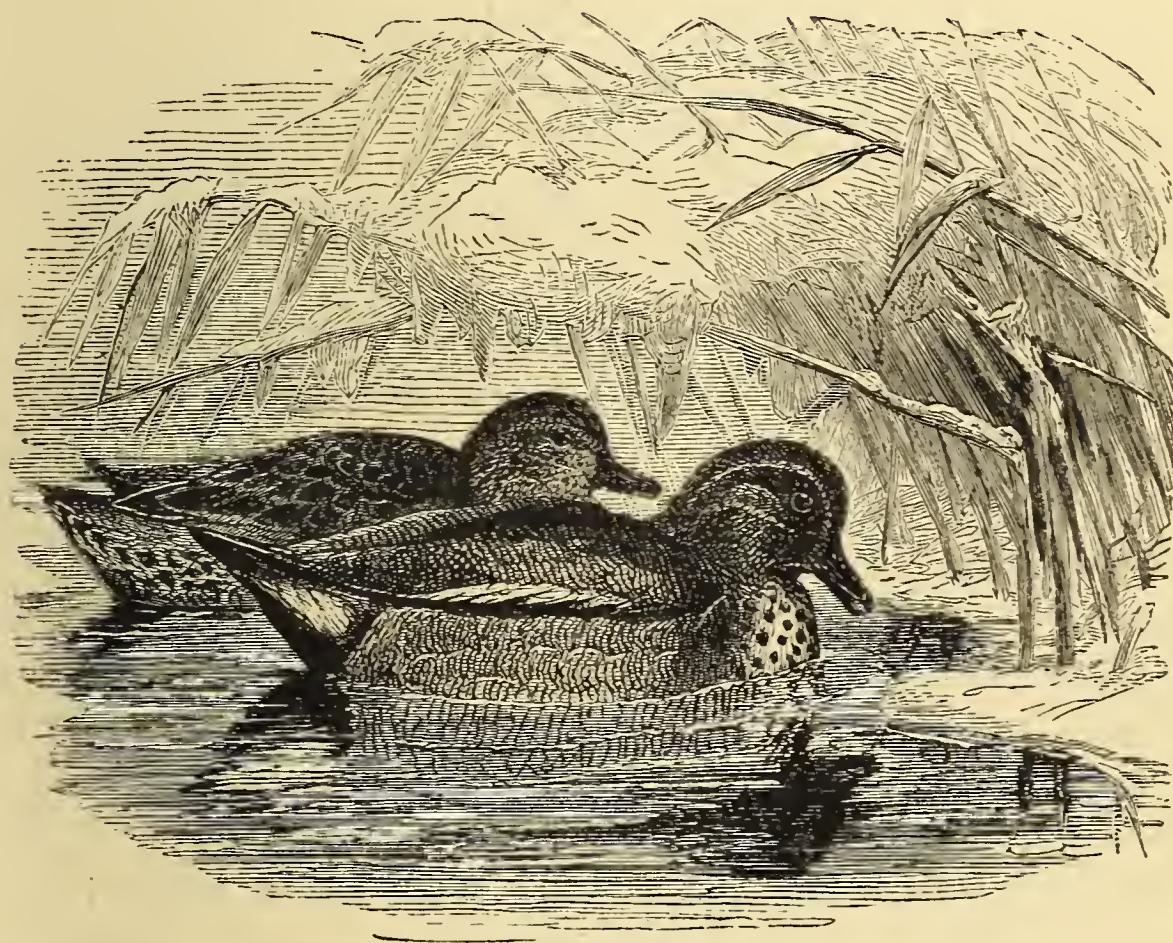
The nest of the Snipe is nothing more than a heap of leaves concealed beneath the shelter of some furze-bush, or projecting grassy tuft. The eggs are a dull white spotted with brown at the large end, and are four in number. The mother is assiduously careful of her young, and is known to carry them away when danger threatens them.

A Devonshire gentleman lately succeeded in taming a Snipe, which he obtained in a starving state, and recovered by the exercise of care and gentleness. She learned to know him and to answer to her name, and would follow him round the room. She was fond of bathing in a dish of water, and was fed chiefly upon worms, though showing equal fondness for young snails, woodlice, and fresh-water shells, eating shell and all. She killed all the worms before she swallowed them, and was careful to wash them clean in the water of her bath before killing them. Any worm from a dung-heap she would not touch; but of the sort she liked she would devour double her own weight in the course of twelve hours!

THE TEAL.

THE Teal is the smallest, and one of the handsomest of the British ducks, and is prized for the delicate flavour of its flesh. It breeds in this country, but not in great numbers, the large majority of the flocks which arrive here in September quitting us just before the breeding season begins. Those that remain resort to lakes, marshes, boggy places, the broads of inland rivers, and such like moist and sedgy localities. Here they

pair early in the spring, making their nests of leaves, grasses, and sedges in considerable quantities, and lining them with feathers and soft down. They show an attachment to the place where they have once built, and return to it again year after year. The nest is usually near the bank, and contains from nine to a dozen eggs of a buffy-white colour; the young brood do not quit the neighbourhood of their birth-place until pairing-time comes round again.



Teal are caught in the decoys along with the mallard and other ducks, but when sold in the market they are reckoned only as "half-ducks," on account of their small size—being rather under fifteen inches in length. The Teal often figures in the canvas of the artist. Its colouring, which is rather complicated, is thus described by Mr. C. A. Johns, in his "British Birds:" Head and neck bright chestnut; on each side of the head a broad green band edged with buff, inclosing the eye and ex-

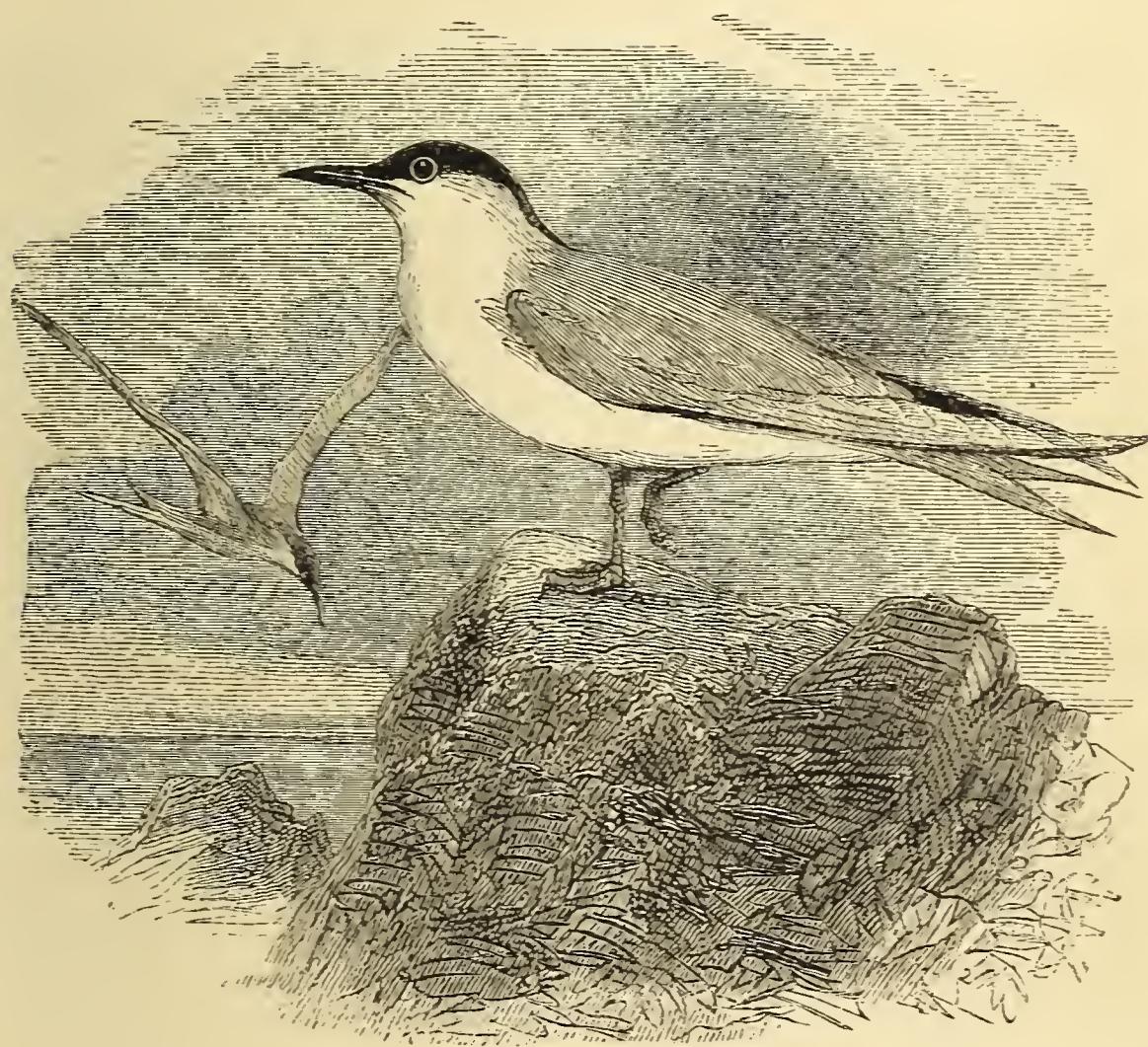
tending to the nape ; lower part of the neck, back, and flanks, marked with numerous black and white zigzag lines ; breast reddish white, with roundish black spots ; speculum black, green, and purple, edged with white ; bill dusky, irides brown ; feet, ash. *Female*—upper plumage dusky brown mottled with reddish grey ; throat, cheeks, and a band behind the eyes yellowish white spotted with black ; speculum black and green.

The food of the Teal consists of insects, worms, and seeds of various kinds.

THE COMMON TERN.

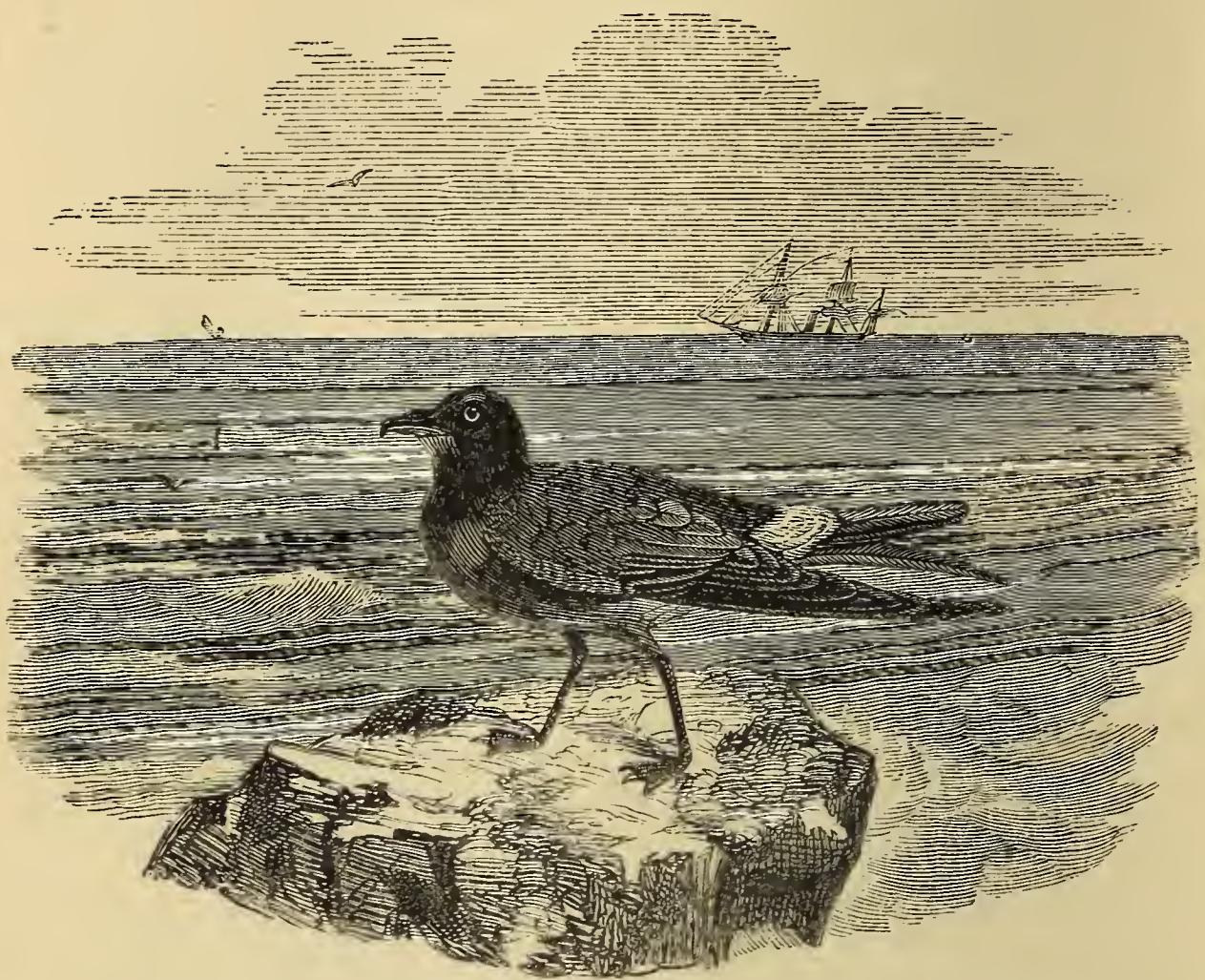
THE Common Tern, appropriately called the Sea Swallow, is very plentiful on our coasts, and is often by casual observers mistaken for the common gull, though it is not so large as that bird. Its tail is forked like that of the swallow, and like the swallow it is the herald of summer, visiting these shores in May, and quitting them in September. It is about fourteen inches in length, much of which is owing to the long feathers of the tail ; the top of the head and nape of the neck are jet black ; the upper parts of the body are ashen grey, the under portions white ; the legs and feet are red, as is also the bill, which deepens into black at the tip. The food of these birds consists mainly of small fish, which they pursue in the shallows and among the breakers of the coast. When thus engaged it hovers along at a few feet from the surface of the water, with its head pointed downwards looking intently for its prey : suddenly it is seen to pounce perpendicularly into the water, where it rarely disappears from view, but rising again with its prize, swallows it, and resumes its former position. When tired of fishing the Terns are seen sporting with one another,

circling about in wild rambling flights, and uttering continually their loud discordant cries. They are rarely seen except on the wing, though they will rest occasionally on buoys and floating logs of wood. In rough weather they quit the open coast and repair to sheltered bays or the mouths of rivers, and at such seasons will often advance to a considerable distance inland.



The Terns usually make their nests on the flat shores or on some low-lying land adjacent. The nest is but a few sticks and dry grasses scraped into a hollow in the ground or on the shingle. The eggs are two or three in number, and are an olive-brown colour spotted with ash. The young birds have a good deal of white about the head, and are generally lighter coloured than the adults.

THE STORMY PETREL.



AMONG the members of the Petrel family, the Stormy Petrel is the best known to British sailors, who call it "Mother Carey's Chicken," and have a prejudice against it, for the very reason which should lead them to regard it with favour—namely, because it foretells the coming of rough weather. Although it is more common in North America than in Europe, it breeds plentifully in the islands to the north of Scotland. It is a small bird, being rarely more than six inches in length, and is of a sooty black colour, relieved with white on parts of the wings and on the upper tail-coverts. The hen bird lays but a single white egg, which she deposits in a hole in the ground, without making any nest. The young bird, which is hatched in June, is lighter in colour than the old ones, and of a rusty hue.

The Petrels are named after St. Peter, from their power of walking on the water, which they are constantly seen to do—pattering along on the tops of the billows with their webbed feet, and only using their wings to keep them above the surface. The bird is rarely seen in calm and sunny weather, but seems to enjoy the gloom of the storm and the darkness of a tempestuous night. The reason for this preference is, that at such seasons it can feed at most advantage—its food being the oily seeds of certain marine plants, small molluscs and crustacea, and minute gelatinous creatures, which, when the waves are rough, are tossed up to the surface and are thus easily caught. It will follow vessels at sea for days and nights together, feeding on the refuse and garbage which are thrown overboard. When tired it can repose on the surface of the water, and is often met with thousands of miles from land. It is only in the breeding season that the Petrels frequent the coasts.

From the peculiar nature of its food, and from other less obvious causes, the body of the Stormy Petrel is almost saturated with oil, and it is therefore turned into a lamp by the people of the Feroe Islands. They draw a wick through the dead body of the bird, and, setting fire to the end which projects from the beak, hang it up in their cabins, where it supplies them with light during the hours of darkness.

Of the other examples of the Petrel family, which are numerous, the best known in Britain is the Fulmar Petrel, a bird over sixteen inches long, which exists in immense numbers on St. Kilda, where the oil obtained from it forms one of the most valuable productions of the island. The Fulmar Petrel is white on the head and neck and on the lower parts, and of a pearly grey on the upper parts. It is seen to follow the whalers in their expeditions, and feeds eagerly on the blubber of the whale. On the banks of Newfoundland, also, it attends upon the fishing-vessels, and feeds on the offal.

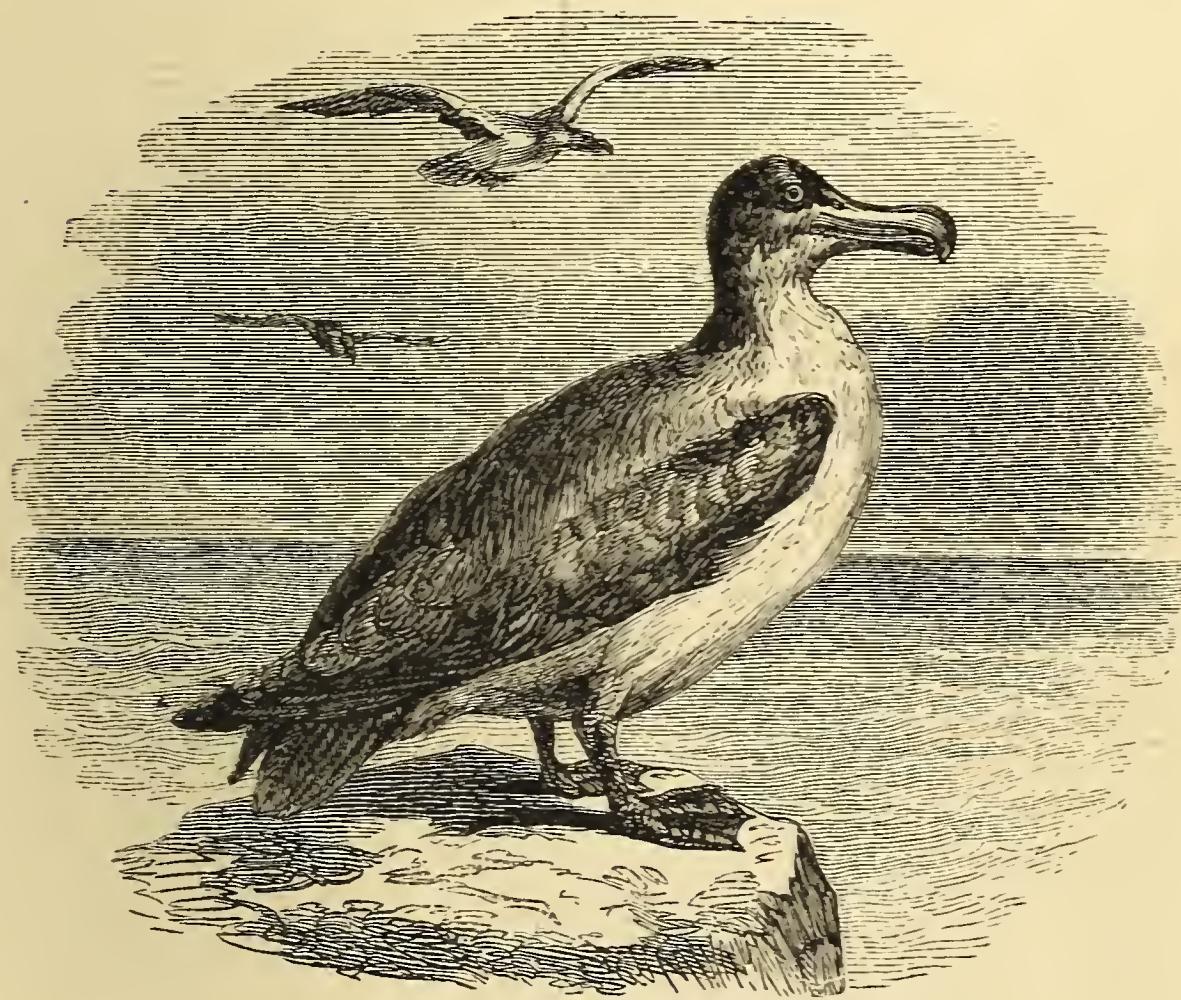
of the cod-fish, which are there caught and stored in immense numbers. The fishermen call the Fulmar, "John Down," and they often catch him with a hook baited with a piece of cod's liver. Like the Stormy Petrel, the Fulmar lays but one egg, and hatches its young about the middle of June.

THE ALBATROS.

THE Albatros is the largest of known sea-birds, sometimes weighing more than twenty pounds, and measuring over twelve feet between the tips of the extended wings. Its plumage is white, with the exception of the top of the head, which is grey, and a few black bands on the back and on some of the wing-feathers. It has a long and strong beak, the upper mandible curved at the end; its wings are long and narrow; its feet are short, and the three toes are completely webbed. This great bird is possessed of astonishing powers of flight, and remains on the wing for days together without rest, apparently sailing along on the air with little or no exertion. It is found in the Southern Seas, and is well known to mariners navigating that part of the globe: it is very voracious, and will follow a ship for days together for the sake of feeding on the offal cast overboard. The sailors often angle for the Albatros with hook and line, and the birds are rarely slow in taking the bait; but it is not easy to haul them on board from the water, owing to the resistance they are able to make by means of their wings. Notwithstanding its great strength, the Albatros never attacks other birds, though it is itself sometimes assailed by the sea-gulls. Its chief food is fish, and it has been seen to swallow fishes of four or five

pounds' weight. If an Albatros is shot, and falls into the water, its companions will pounce upon and devour it.

Although the Albatros is not seen between the tropics, it is met with in immense flocks in the neighbourhood of Behring's Straits and Kamtschatka, about the end of June: they are said to be attracted thither by vast shoals of fish, whose movements they follow. On their first appearance in those seas they are very lean, but,



obtaining there an abundance of food, they soon become fat.

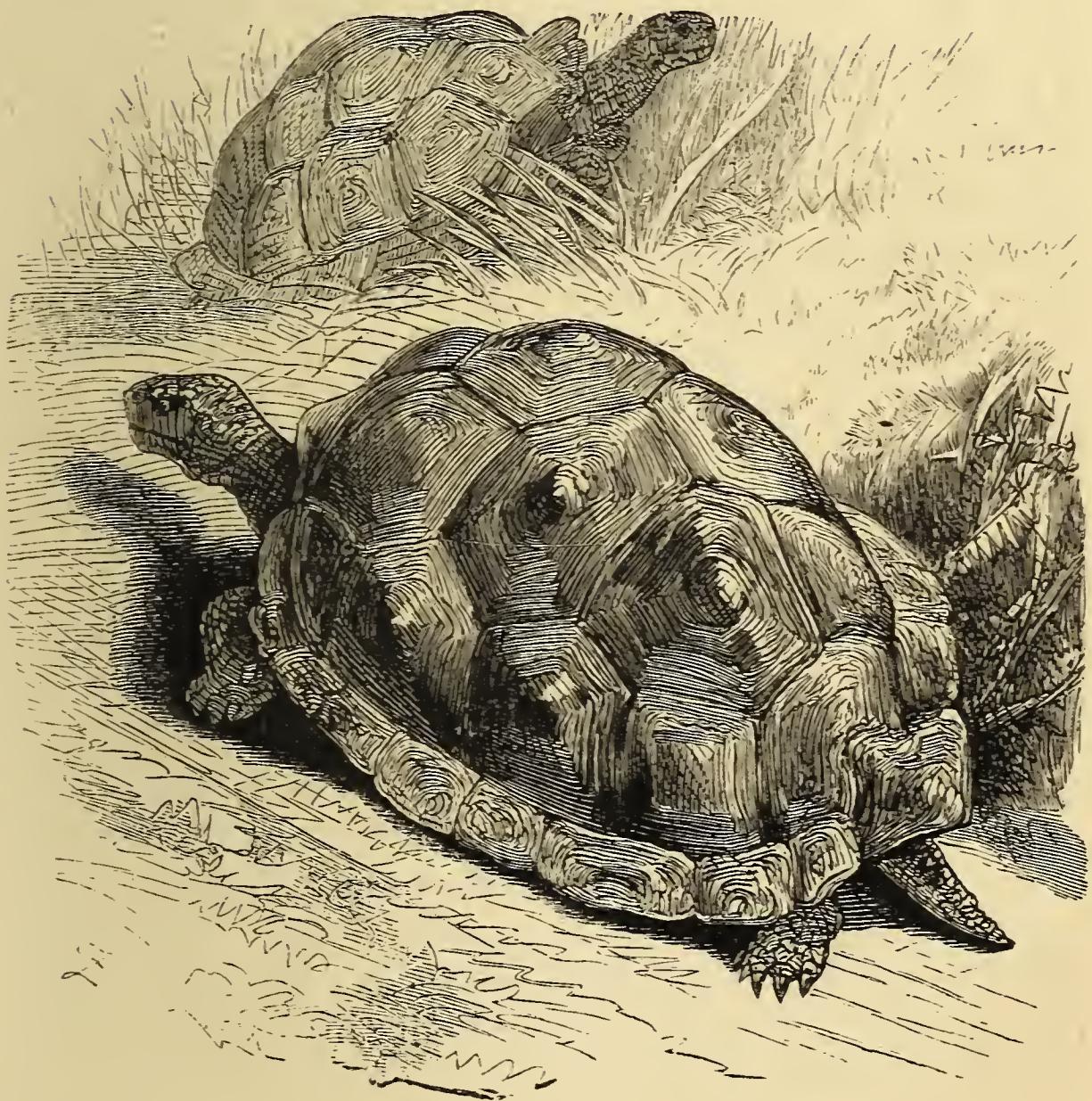
These birds have their homes on the summits of barren rocks and lofty precipices, far from the haunts of men. The female lays but a single egg on the ground, and the only nest she makes is formed by scraping the earth around it. When the birds are approached by man in their rocky solitudes they do

not seem alarmed—they will not even move out of the stranger's way, but will suffer themselves to be taken with the hand. Their flesh is tough and dry. Their wing-bones, which are very long, are valued for pipe-stems.

Besides the common or Wandering Albatros above described, there are two other species—the Sooty Albatros (*Diomedea fuliginosa*), and the Yellow-beaked Albatros (*Diomedea chlororhynchos*).

REPTILES.

THE GALAPAGOS TORTOISE.



THE Galapagos Tortoise, found in the Galapagos Islands in the Pacific Ocean, is the largest known species, individuals being sometimes met with measuring more than four feet in length. They are of a dull

brown colour without markings, the males being much the largest, and distinguished from the females by their greater length of tail: some old males have been caught which weighed nearly three hundred pounds. They frequent by choice the spots where there is most moisture, and their food is the leaves of trees, berries, and a species of lichen. They can live with little or no water in places where juicy plants abound, but are fond of water, and will have it if it is to be obtained: in the islands which contain springs they make paths from all directions leading to the water, which paths become beaten broad and flat by their continued going and returning. Mr. Darwin says, "Near the springs it was a curious spectacle to behold many of these great monsters; one set eagerly travelling onwards with outstretched necks, and another set returning after having drunk their fill. When the Tortoise arrives at the spring, quite regardless of any spectator, it buries its head in the water above its eyes, and greedily swallows great mouthfuls, at the rate of about ten in a minute. The inhabitants say that each animal stops three or four days in the neighbourhood of the water, and then returns to the lower country." They are found, however, in islands where there is no water save that which falls in rainy weather.

When on their journeys Tortoises travel both by day and by night. Their progress is very slow, being seldom more than three hundred and sixty yards in an hour; but by perseverance they arrive sooner than would be expected at their journey's end. The female lays her eggs in October, either in the sand where she covers them up, or in holes and slits in the rocks. The eggs are hatched by the warmth of the sun and soil, and the young are devoured in great numbers by buzzards and other birds and animals of prey. Those which grow to maturity are very long-lived, far exceeding in their age that of man. Few of them are ever found dead from natural causes, but they are

sometimes killed by falling from rocks and high places. The flesh of this animal is much used for food, and is eaten both fresh and salted ; an excellent clear oil is also prepared from its fat.

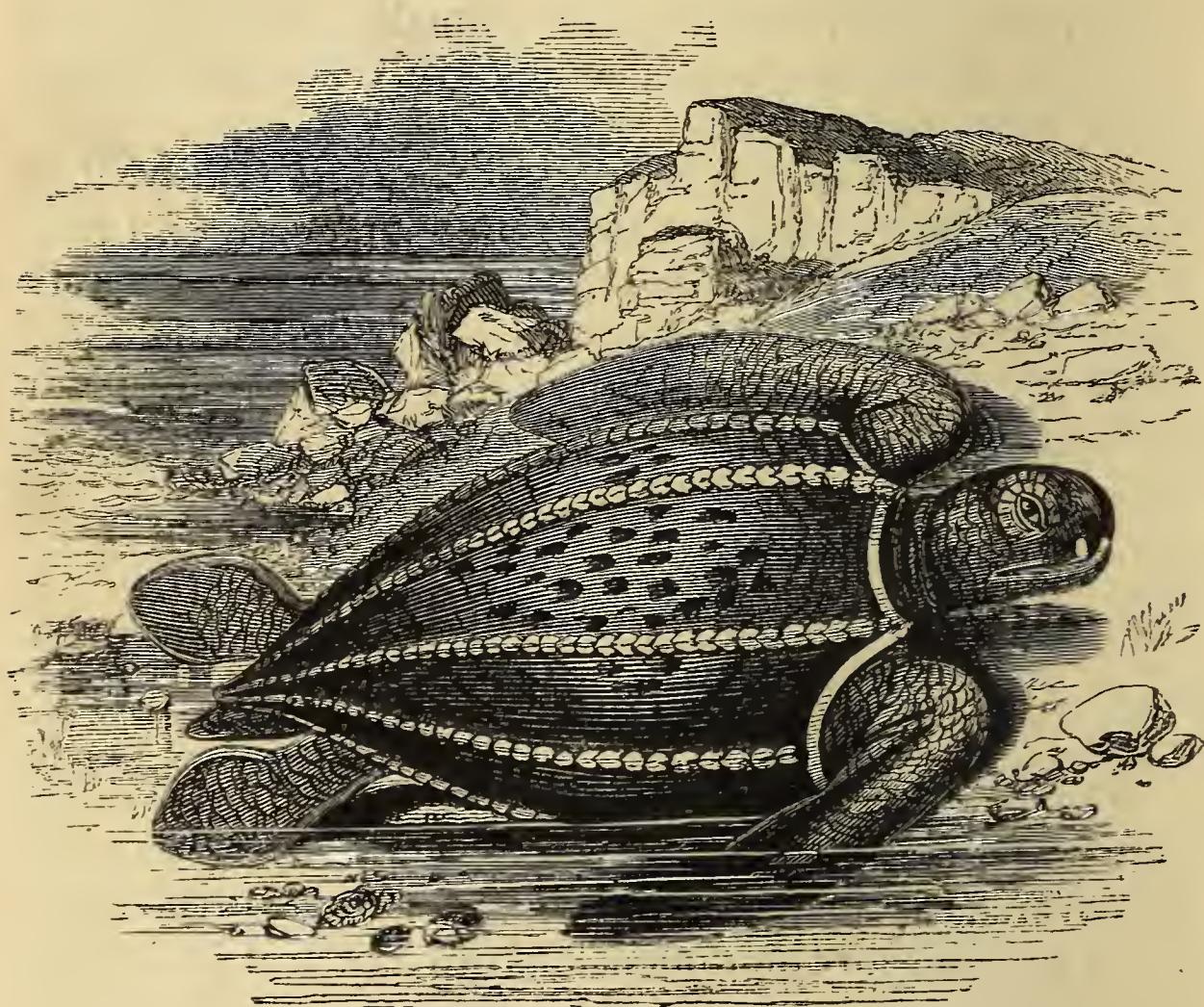
The Galapagos Tortoise is found in many parts of the world. Professor Bell states that it is not improbable that they all originally came from the Galapagos Islands : " When it is known how long these islands have been frequented by the buccaneers, and that they constantly took away numbers of these animals alive, it seems very probable that they should have distributed them in different parts of the world."

Though the Tortoise does not hear very readily, it is not deaf, and it may be taught to come at the call of a voice to which it is accustomed ; and though it rarely utters a sound, the male at least is not dumb, for during the breeding season it may be heard to roar hoarsely at the distance of a hundred yards.

THE LEATHERY TURTLE.

THE Leathery Turtle, so called from the peculiar substance, resembling soft leather, with which its shell is covered, is one of the largest of the turtle kind, often growing to the dimensions of eight feet in length, and weighing more than fifteen hundredweight, or three-fourths of a ton. This turtle is furnished with very long and strong legs, the fore limbs especially being exceedingly powerful, and measuring in a full-grown specimen about three feet in length and nine inches in width : instead of claws the feet are furnished with a narrow horny scale at their extremities. With such powerful limbs, the Luth, or Leathery Turtle, is a strong swimmer, and can venture out to sea, being often met with at great distances from the land. It is found

in the Atlantic, Pacific, and Indian Oceans, and is sometimes driven entirely across these vast seas and landed on foreign shores. Some of these Turtles have been occasionally captured on the coast of France ; and about a century ago three of them, weighing from seven to eight hundred pounds each, were caught at Scarborough on the Yorkshire coast. On that occasion one of them was served up at a dinner to which a party had



been invited, and one gentleman who partook of it suffered all the symptoms of poisoning, though happily without any fatal effect.

The food of this huge Turtle is fish, with various kinds of crustacea, molluscs, radiates, and other animals. It is found at certain seasons in great abundance in the Tortugas or Turtle Islands of Florida, whither the females resort for the purpose of laying their eggs, which they

deposit in the sand in two portions, together numbering from three to four hundred.

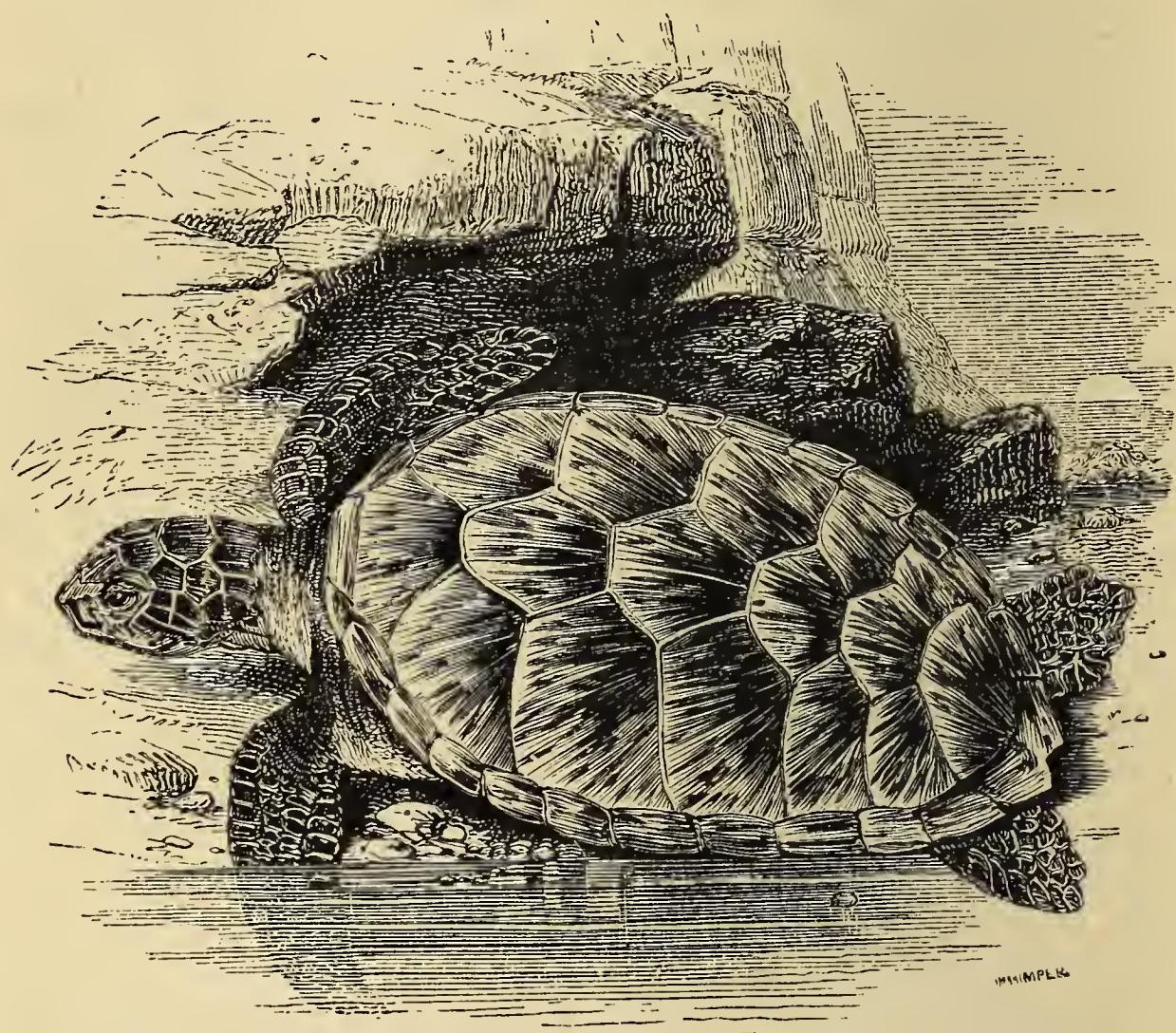
This large Turtle is remarkable for the absence of the strong horny plates which form the defence of other species: the strong leathery skin which covers the carapace and plastron stands in the stead of such plates. In the young animal this skin is covered with rough tubercles, and only becomes smooth when it has arrived at maturity. Seven sharp ridges run along the back, which ridges are also tubercled in the young animal and but slightly toothed in the full-grown one. This Turtle is furnished with formidable jaws, the upper one being notched so as to form two teeth curved and sharply pointed, and the lower one strongly hooked. The eyes of the animal are placed vertically instead of horizontally, producing a singular effect when seen to open and shut. The general colour of the body is a deep brown spotted with yellow, the leathery skin being sometimes flecked with black and white.

The French name (Luth) by which this animal is widely known, is said to have been given to it under the supposition that it was the species used by the ancients in the early construction of the lyre.

THE GREEN TURTLE.

THE Green Turtle, the best known of all the Turtles, derives its name from the colour of its fat, valued as a luxury by the lovers of good eating. It abounds in the warm latitudes, being found on the shores and in the seas of both hemispheres, but is most plentiful in the island of Ascension and the Antilles, where great numbers of them are caught. Its shell, though manufactured into various articles, is but of small value. In this country the flesh of the Turtle, though usually

served up at civic feasts, is very expensive, and is rarely eaten but by the rich: sailors, however, who voyage to southern climes eat it frequently, and it is often the means of restoring them to health after long suffering from the use of salt provisions. It is a good remedy against the scurvy and other disorders to which seamen are liable, and on this account numbers of Turtles are kept in ponds in the island of Ascension,



for the use of the crews of Her Majesty's ships as they call there on long voyages.

Numbers of the Green Turtle are brought to this country, where there is always a market for them at a good price. They are exceedingly tenacious of life, and will live for weeks on board ship without any food, and are known to survive such injuries as would kill

most other animals. Those which are intended for the London market are brought over in tanks of sea-water, and they may be kept alive until wanted for a long time after their arrival.

Turtles are caught both on land and in the water. At certain seasons the females visit the shore for the purpose of depositing their eggs, for which they dig deep holes in the sand. At this time the sailors in search of them are in the habit of lying in wait and intercepting them as they move heavily along the beach. Their motions are slow, and it is easy to come up with them ; it is not so easy, however, to turn them over on their backs, as some of them are too heavy for even a couple of men to move, so that recourse is sometimes had to levers to tilt them over. When once a Green Turtle is turned over on its back it is helpless, since it cannot recover its position, and may afterwards be carried on board the boat at leisure. At sea Turtles are sometimes caught floating, apparently asleep, on the surface, and are lifted into the boat without resistance. More frequently, however, they are regularly chased, and are caught with a harpoon and line. The harpoon is so combined that the iron head, to which the line is fastened, detaches itself from the shaft when the blow is struck. The Turtle is harpooned as it lies at the bottom in shallow water, varying in depth from six to ten feet ; the harpoon, directed by a vigorous arm, pierces through the shell ; the shaft comes away, but leaves the weapon deep in the animal's flesh ; the stricken prey struggles furiously to escape, but in the end is wearied out, and is either towed to the shore or lifted into the boat.

The food of the Green Turtle is said to consist mainly of vegetable substances found in the sea. Besides their flesh, which is so great a luxury, they yield a pure limpid oil useful for many purposes ; and of this a full-grown specimen will occasionally furnish as much as thirty pints. The eggs of the Turtle are highly

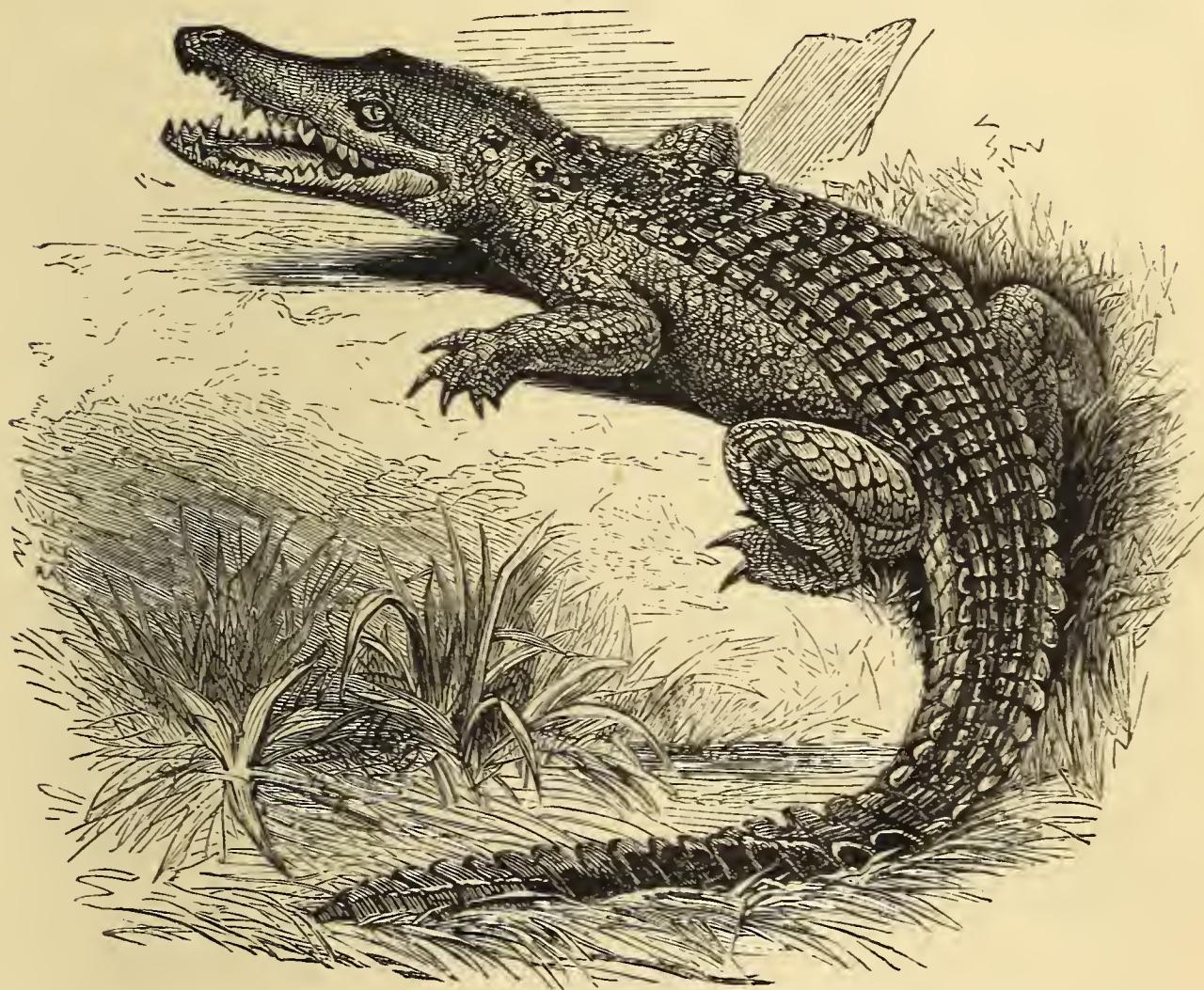
esteemed, and are as great a delicacy as the flesh. It is said that when a female is depositing her eggs she will not move, even though a man should go up to her and seat himself on her back ; but the moment the business is over she makes at once for the water.

THE ALLIGATOR.

IN form the Alligator closely resembles the crocodile of Egypt. It is distinguished from the true crocodile by the different shape of its head, the number and position of its teeth, and by the toes not being completely webbed, as the crocodile's are. There is a further distinction in the habits of the two animals : the Alligator is never known to quit the fresh water, while the crocodile often frequents the mouths of large rivers, and will even cross the sea from one island to another.

The Alligator has been occasionally met with of the enormous length of twenty feet. It is found in the southern parts of North America, and exists in immense numbers in the least-frequented parts of South America. Alligators are not partial to running streams, and are therefore rarely met with in the navigable courses of the rivers ; but in the ponds, creeks, lagoons, and marshes they are seen in countless multitudes—their large flat heads projecting above the leaves of the aquatic plants which cover the surface of the water. Others are seen basking in the sun, or sleeping in the mud of the banks. During the hottest part of the day they come on shore and lie among the reeds ; but they always return to the water at night, where they are active in pursuit of their prey—fish being their favourite food. They will seldom attack a man, unless in defence of their eggs or young. The female Alligator usually

lays, in a hole in the sand, about fifty eggs, which are about the size of those of a goose : having covered them up, she leaves them to be hatched by the heat of the sun, but keeps a careful eye on the place where they lie. She is not, however, always able to save them from the vultures, who will watch her as she is laying, and the moment her back is turned will scratch up her eggs and devour them. Half the broods do not live to



reach the water. When the young are born they are about six inches in length, and are immediately led to the pond or lake by the mother ; there many of them are eaten up by the full-grown males, and by ravenous fish, and very few of the fifty survive to reach maturity.

The Alligator is hunted both by the Indians and the white man ; and, notwithstanding his huge bulk and rugged armour, he is almost sure to fall a prey to his

pursuers, unless he can make a timely escape to the water. The flesh of this huge reptile has a strong musky flavour, but it is relished by the Indians, and even Europeans who have become used to it declare it to be delicate and savoury.

Baron Cuvier has described the Pike-headed, the Spectacled, and two varieties of the Cayman. We have not space to describe the difference existing between these four species: in their habits they closely resemble each other.

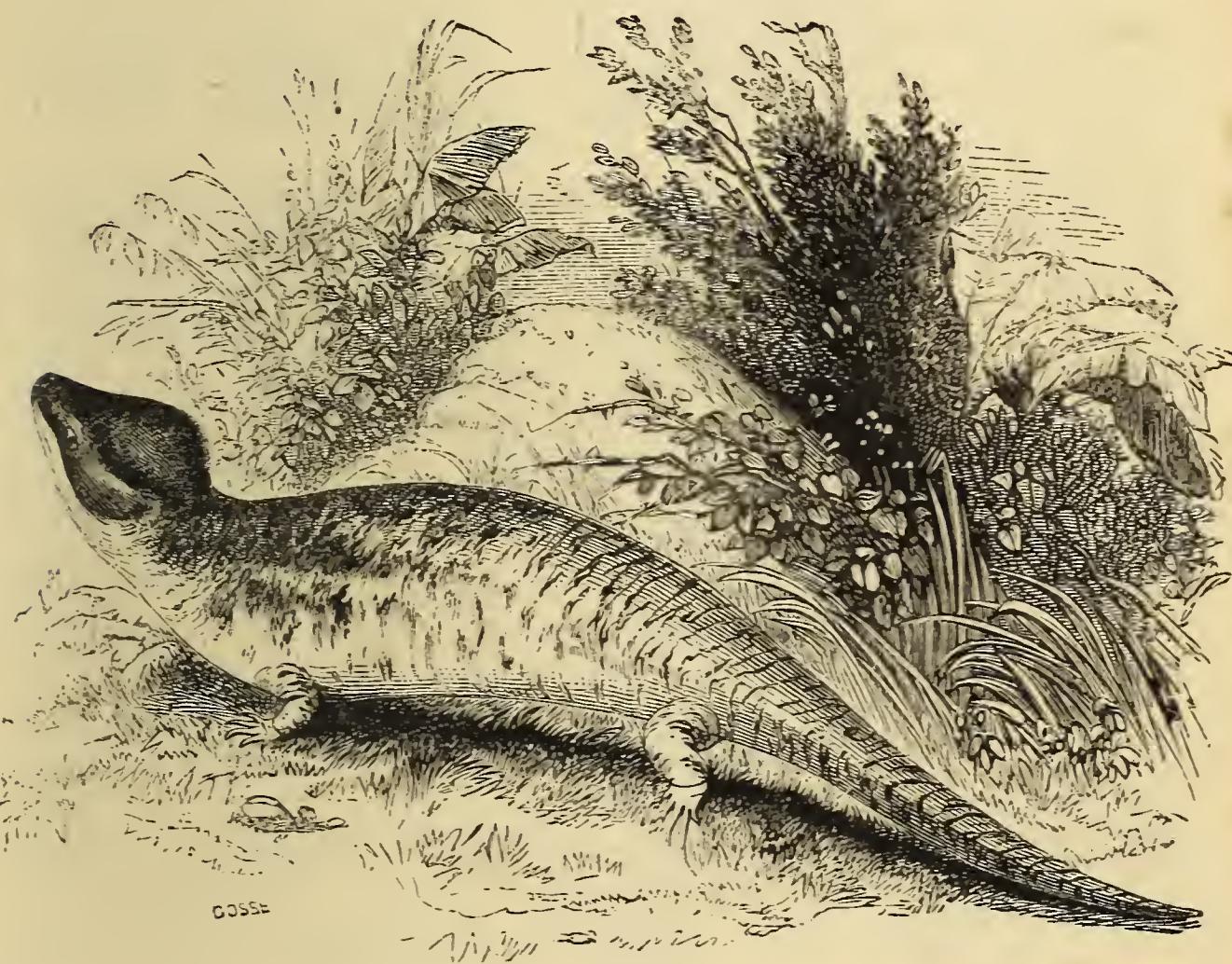
THE GALLIWASP.

THE Galliwasps is a member of the family of the Skinks, certain species of which seem to establish a sort of connexion between the lizards and the serpents. This family comprises a great number of species, and they are found in dry regions not only in temperate climates, but also in the hottest countries on the globe. Resembling in form and character the other groups of lizards, they have yet peculiarities which distinguish them in a manner sufficiently marked. Thus their cranium is covered with plates joined together at the edges, generally of an angular form, and having the lines of junction perfectly distinct: their trunk is completely covered over with scales, varying in size in different species, but always disposed like a coat of mail, and overlapping each other like tiles or slates, similar to those of the greater part of the bony fishes; and their tongue is flat, and not attached to the hollow of the lower jaw, and is covered in whole or in part with papillæ.

The Galliwasps is found in most of the islands of the West Indies, and is common in Jamaica, where it has a very bad character, which, however, it does not deserve. It is much feared by the natives, and especially

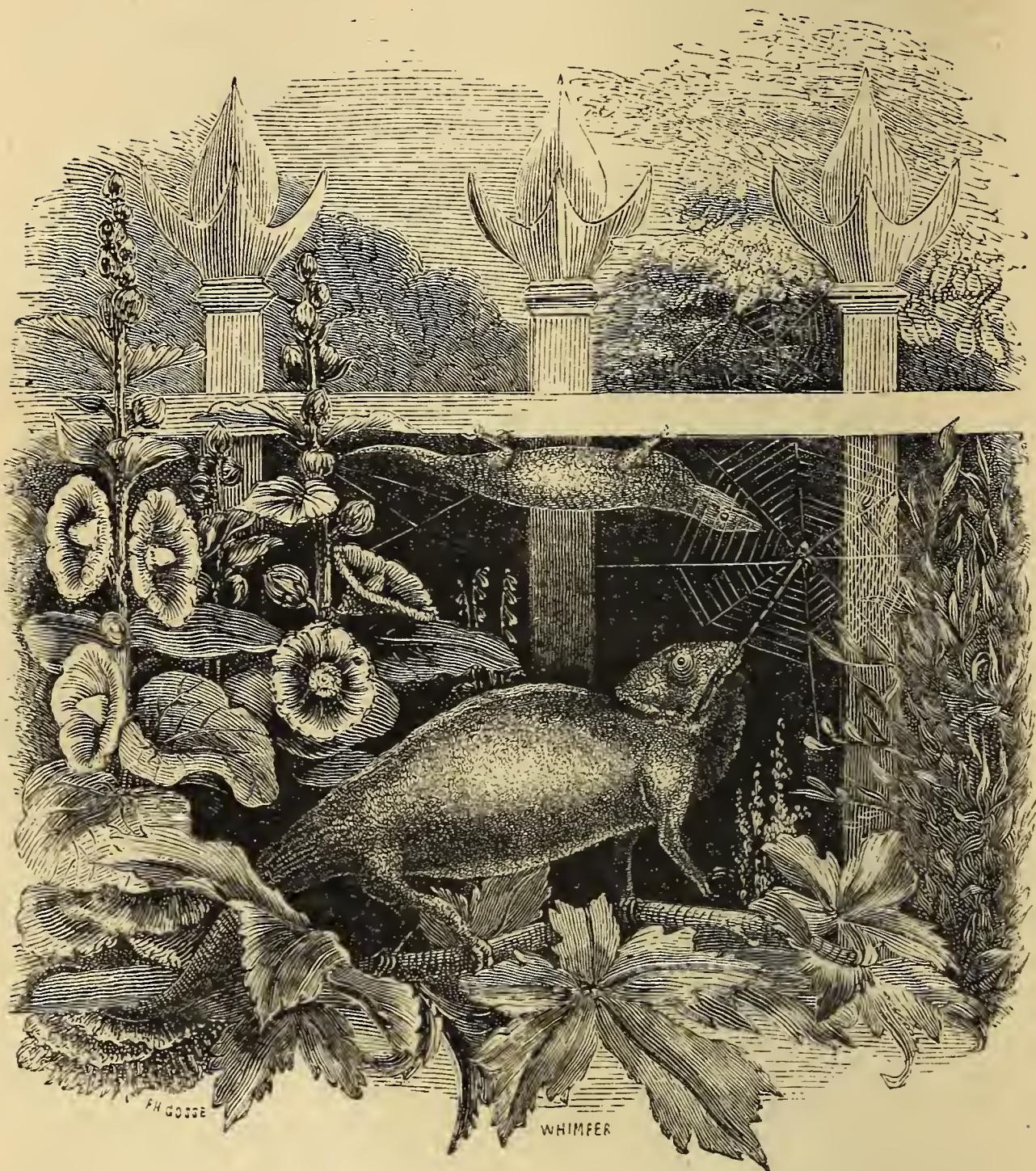
by the negroes, who suppose that when it is irritated its bite is as venomous as that of any poisonous snake, and is followed by immediate death. On account of the terror which it inspires, the negroes have given it the name of Maberuga, a term which they apply to anything known or supposed to be poisonous.

The Galliwasp frequents damp, moist, and oozy spots in the neighbourhood of ponds and marshes, and is in



the habit of hiding in the clefts and fissures of wells exposed to the action of moisture where damp is long retained. It is about twelve inches in length ; and its colour is brown, more or less deep in tone, and varied with bars or bands of a deeper colour. There are several species of the Galliwasp, all of them being found in the West Indies.

THE COMMON GECKO.



THE Common or Ringed Gecko is one of a curious group of lizards found in tropical countries, where they are frequently regarded with a superstitious dread by the inhabitants. The formation of the feet enables them to run along upon the walls of a room, and being of a small size they conceal themselves with ease in holes and crevices. The Common Gecko is an Asiatic

species, well known in India. It is rarely seen by day, but comes forth at night and runs about rapidly in search of its prey, uttering occasionally a clucking sound like that sometimes used by riders or drivers to urge their horses forward—and this sound has probably given it its name of Geck-o. During cold weather these animals withdraw to their winter quarters. They are of a reddish grey colour, with white spots; the scales of the back are flat, but scattered over them are a number of projecting tubercles arranged in irregular rows. The female is larger than the male.

Allied to the above is the Spotted Gecko, a rather pretty species, found in India, China, and Ceylon. Sir Emerson Tennent relates two curious anecdotes, showing that these little creatures can be tamed by kindness:

“In a boudoir where the ladies of my family spent their evenings, one of these familiar and amusing little creatures had its hiding-place behind a gilt picture-frame, and punctually as the candles were lighted, it made its appearance on the wall to be fed with its accustomed crumb; and if neglected, it reiterated its sharp quick call of *chic-chic-chit*, till attended to. It was of a delicate grey colour, tinged with pink. Having by accident fallen on a work-table, it fled, leaving its tail behind it, which, however, it reproduced in less than a month. This faculty of reproduction is doubtless designed to enable the creature to escape from its assailants; the detaching of the limb is evidently its own act.

“In an officer’s quarters in the fort of Colombo, a Gecko had been taught to come daily to the dinner-table, and always made its appearance along with the dessert. The family were absent some months, during which the house underwent extensive repairs, the roof having been raised, the walls stuccoed, and ceilings whitened. It was naturally surmised that so long a suspension of its accustomed habits would have led to the disappearance of the little lizard, but on the return

of its old friends, at their first dinner it made its entrance as usual the instant the cloth had been removed."

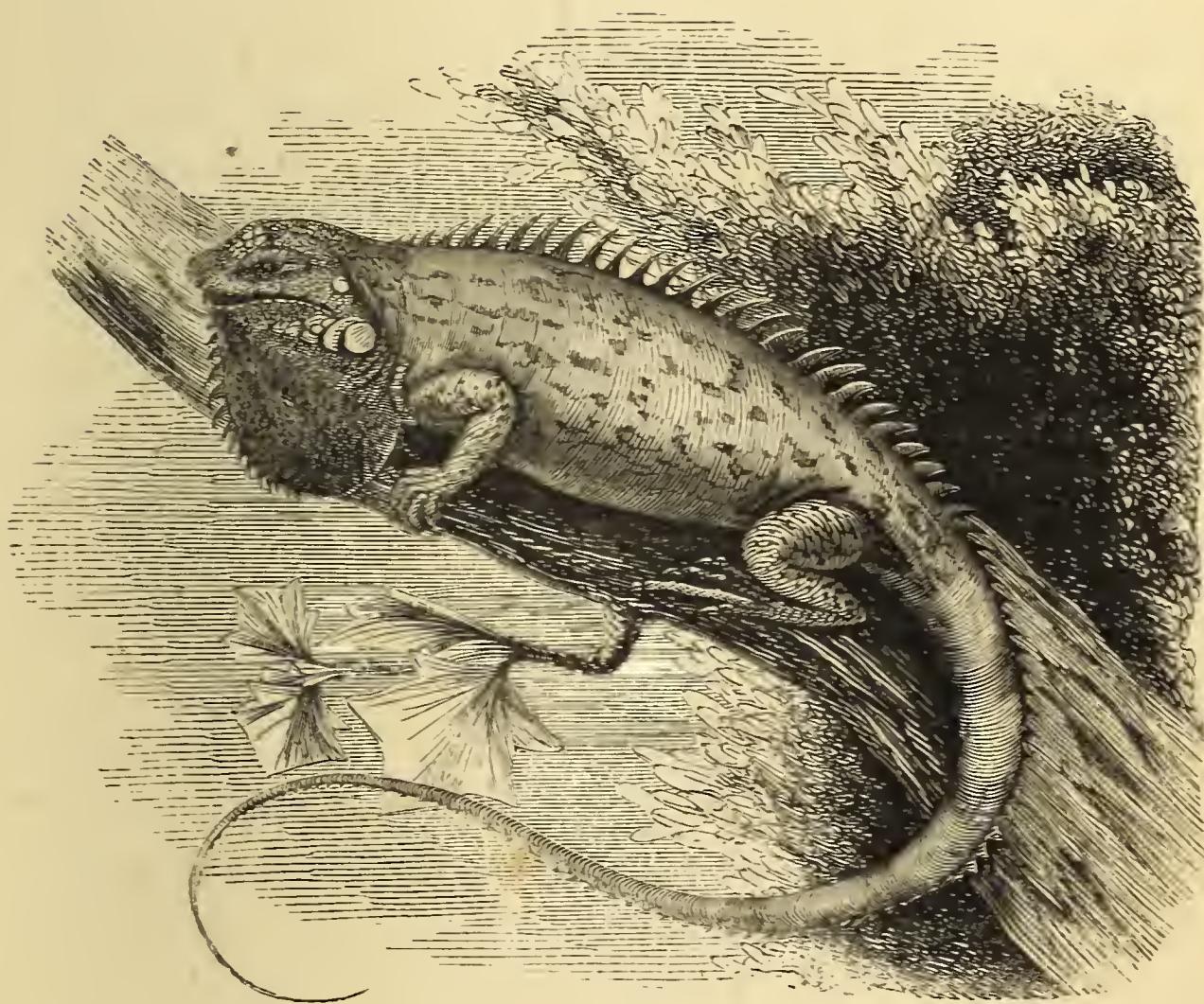
Other Geckos are, the Fan-foot, or House Gecko, which is a native of Northern Africa, where it haunts the dwellings of the inhabitants, and is disliked and dreaded by them from its alleged property of poisoning everything it touches ; the Turnip-tailed Gecko—so called from the odd shape of its tail, which when reproduced assumes the form of a young turnip—and which is found in tropical America ; and the Fringed Tree-Gecko, which is a native of Java. This last-mentioned animal is remarkable for the broad expanding membrane which fringes the whole of its body on both sides, and which, as well as the back, is covered with scales. It lives in trees, and its broad membrane aids it in leaping from branch to branch after the manner of the flying squirrels. Its colour is brown above, and a whitish grey beneath.

THE IGUANA.

THE Iguanas have a remarkable and not very inviting aspect : the head is large, and covered with large scales ; the mouth is enormously wide, and studded with triangular, notched teeth ; the chin is furnished with a kind of dewlap, large, baggy, and capable of inflation at the will of the animal ; and the tail is long, thin, and tapering. The usual colour of the Iguana is olive-green, and its average size is about four feet, though specimens are sometimes met with six feet long.

The Iguana passes most of its time on trees, preferring those which grow near the water ; its food is said to be chiefly if not entirely vegetable. It takes to the water with great zest, is an admirable swimmer, and

will remain under water for an hour at a time without apparent inconvenience to itself. The flesh of the Iguana is much prized for its flavour and delicacy, and has been compared to the breast of a spring chicken ; it is prepared for the table much in the same way as chickens are. The eggs also, of which the female lays from four to six dozen, are in good repute ; they have very little albumen, the shell being almost entirely



filled by the yolk ; they do not harden by boiling. The female Iguana lays her eggs in the sand on the margin of rivers, lakes, or the sea, and leaves them to be hatched by the sun.

The excellent flavour of its flesh subjects the Iguana to sore persecution, and it is constantly hunted and captured in every possible way. Sometimes it is caught by the lasso or noose of rope thrown dexterously round

its neck as it sits on the branch of a tree ; sometimes it is snared in nets ; and sometimes it is hunted by dogs trained to the sport. Expeditions are frequently formed for the sole purpose of hunting them—the hunters preparing a vessel, in which they visit the haunts of the Iguana along the coasts and up the creeks and rivers. Those which are caught alive are stowed away in the hold, where they will live a long time without food ; and those which are killed in the chase are salted down. They cannot run very fast, and often, instead of running from their persecutors, will attempt to frighten them off by puffing out their dewlap and assuming a fierce look.

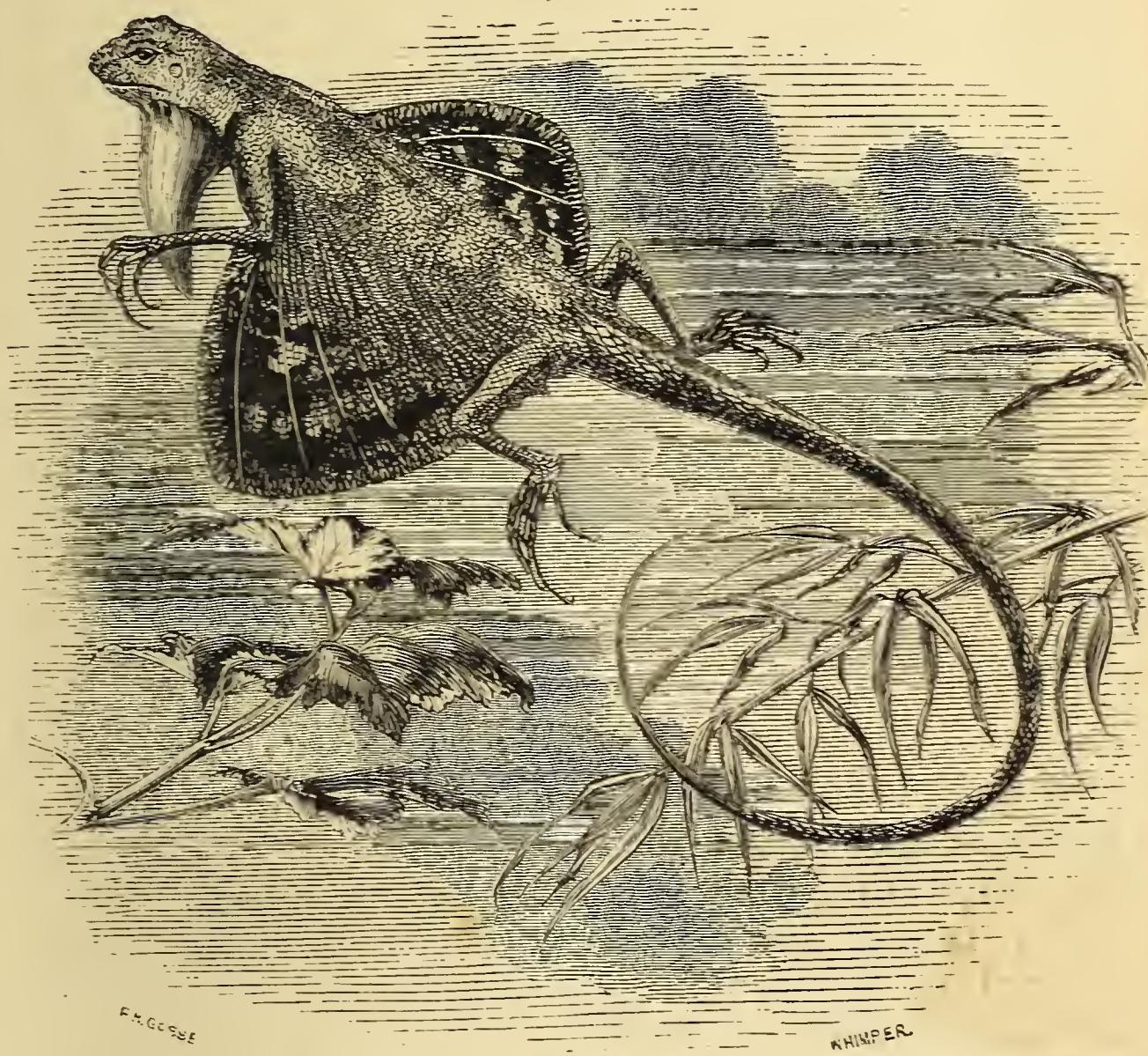
The Iguana is a native of Brazil, Cayenne, and the Bahamas : it was formerly very common in Jamaica ; but in that island has of late years been hunted almost to extermination. It may be tamed by kindness, and taught to return the caresses of its owner.

THE GREEN DRAGON.

THIS small lizard, which is considered one of the most curious of all the reptiles, is a native of Java and of other neighbouring islands of the Indian Archipelago. It has been supposed that this little creature—not more than a few inches in length—was the original source of the various fabulous accounts of the terrible Dragon which figured in old mythological legends and in traditions less ancient.

The food of this lizard consists of flies and other insects, which it pursues among the upper branches and twigs of trees. Its most conspicuous characteristic is a kind of wing, or parachute, formed of a membrane attached to the ribs and projecting outwards : by means of this provision it is able to take long flying leaps in

the air from one tree to another—sometimes clearing as much as thirty paces at a leap. While the animal is at rest the wing or parachute lies folded up along the sides, and is only expanded when it is ready to launch itself forward into the air: in its flight it inflates the



long pointed dewlap under the throat, probably thereby increasing its buoyancy; the motion of its wing produces a slight fluttering noise.

These Dragons are perfectly harmless, and may be handled with impunity: numbers of them are devoured by serpents.

THE MOLOCH LIZARD.



THE Moloch is one of the lizards belonging to the genus *Agama*, varieties of which are found in Jamaica, in Egypt, in Northern Africa, and in Russia. Australia is the native country of the Moloch. This strange animal is the most hideous and formidable-looking of the whole family, and but that it is of comparatively small size, it would certainly be regarded as the most terrible monster the earth has produced. Its colour is a dull yellow, mottled with brown spots over the whole body, mingled with splashes of deep red bordered with black. The entire surface of the skin, from the jaws to the tip of the tail, including the feet, bristles all over with sharp spines or spikes, every single one of which is capable of inflicting a wound ; and they are crowded together in such profusion, that

not even the smallest space is free from them. Two very large spikes, in position like horns, project from the top of the head above the eyes ; and over the neck there is a kind of hump armed with spiny scales and throwing out a long and formidable spike on either side. The spines on the back are arranged in groups, the central spine of each group being much larger than the surrounding ones. All the larger spines are hollow, or at least they are not of a solid horny substance, but are fitted upon protruding masses of the skin, much in the same way as the head of a spear or of an arrow is fitted on the shaft. The spines of the head and limbs are smaller than those of the back, but are similar in shape and in arrangement. Long sharp spines cover the whole of the tail, enclosing it completely, so that it could not be taken hold of without wounding the hand ; and even the toes are defended by rough protruding scales.

Of the habits of the Moloch, and of the nature of its food, little seems to be known.

THE CHAMELEON.

CHAMELEONS are the most remarkable among the entire class of reptiles. They are distinguished by their peculiar feet, with which they can grasp anything as if with hands ; by their shagreen-like skin ; by their prehensile tail ; by their eyes, which are large, round, and independent of each other, so that they can look in two directions at once ; by their long tongues, which they can protrude to the length of five or six inches, considerably more than half the length of their bodies, in an instant ; and by their extraordinary faculty of changing colour. They are about ten inches in length, and are found in the warmer countries of the Eastern hemisphere, and in Australia.

The Chameleon lives in trees, where it clings to the branches by means of the feet and tail. It is very slow and cautious in its movements, and cannot hunt anything, but lies in wait for insects on which it feeds. When about to seize an insect, the Chameleon waits until the victim has approached sufficiently near, and then suddenly darting forth its long tongue, which is tipped with glutinous matter, returns it into the mouth



with the doomed insect adhering to it. These strange creatures will, however, exist a long time without food of any kind ; they have been kept in confinement for a month or six weeks at a time, without being observed to eat anything, and without appearing to suffer much by their long abstinence.

The frequent changes of colour in the body of the Chameleon have led to various attempts to account for a fact so strange and yet so well certified. It has been supposed by some that these various changes are caused

by alterations in the state of the circulation consequent on different states of the animal's health ; that, the blood being of a violet blue, and the second skin yellow, the natural healthy hue would be green, and that the variations in colour are but the effects of disease causing a greater or less amount of blood in the superficial blood-vessels. The changes of colour are different in the different species. In some the variations are confined to the various shades of brown, from nearly black to pale buff ; in others, green and yellow predominate. Mr. Milne Edwards, whose explanation is pretty generally received, ascribes the changes of colour in the Chameleon to the existence of two layers of membranous colouring matter placed one above the other, but disposed in such a way as to appear sometimes together under the skin, and sometimes in such a manner that one may hide the other. He is of opinion that all the changes of colour manifested by the animal may be explained by the varying positions of these two layers, whose existence it is presumed he has satisfactorily ascertained.

Numbers of Chameleons have been, from time to time, exhibited in the Zoological Gardens ; but they never live long in our climate. A gentleman who kept two of them for several months describes them as generally of a pale greenish stone-colour. He placed them in a wicker basket in a bow-window. They would sleep many hours in the day, and when the sun shone upon them would flatten themselves to expose as much of their bodies as possible to the sun's rays. They fed upon cockroaches, which they caught with the tongue in the manner above described ; but they would not take food oftener than once in three or four days. They slept on the projecting edge of the basket, holding fast to the wicker-work with their tails.

This family embraces but one genus ; but the species are numerous.

THE SURINAM TOAD.



THE Surinam Toad, as its name indicates, is a native of Surinam ; it is, however, found also in various districts of Central America, and, though a most repulsive object to look at, is used as an article of food among the negroes. This strange creature is one of the ugliest members of a tribe which is proverbially ill-favoured ; it is of a brownish olive colour above, and a dirty white on the under parts ; its snout is prolonged with a kind of leathery tube ; and it is covered all over the back, the sides, and the limbs with hard granular knobs and horny tubercular projections. It is remarkable and interesting, however, for the extraordinary manner in which the care and rearing of its young are provided for. Other toads deposit their eggs in the damp ground, and leave them to their fate ; but when the eggs of the

Surinam Toad are laid, the male places them all on the back of the mother, making use of his paws to lift them. They cling to the mother's back by means of some adhesive substance, and ere long they sink into a number of small cells adapted for them in the skin, which cells then become closed over by a membrane. In this situation the eggs are hatched by the warmth of the parent's body ; the tadpoles do not come out of the cells, but remain there until they have attained their perfect form, and are in a condition to move about upon the ground.

The skin of this toad is—at least upon the back—nearly half an inch thick, and, as is the case with other toads and frogs, is separated from the muscles of the body—a provision that allows room for the formation of the nursing cells, which penetrate nearly to the whole depth. When the young are completely formed they force their way out of the cells by breaking through the membrane covering them, and are now able to shift for themselves. When the entire brood have taken their departure the cells they lately inhabited begin to fill up again, and the back of the mother resumes by degrees its former rough and puckered appearance. The young occupying the middle portion of the back are the first to make their escape ; but nearly three months elapse after the deposition of the eggs before the whole of the young are perfectly formed.

THE GREEN TREE-FROG.

THIS is one of the smallest of the frogs, and it has latterly become much better known than it used to be, owing to the practice of keeping it in the vivarium, or under glass cases with growing ferns. In form it is not unlike the common frog ; its colour is green on the

upper parts, occasionally marked with olive spots, a streak of lighter colour running from the head down each of the sides, and gradually fading into the hue of the skin. The under parts approach to a white hue, and the bright green of the back is divided from the pale colour beneath by a line of black running along each side. These little creatures are much admired as pets: when kept in fern cases they generally climb the



perpendicular side of the glass, and there adhere for a long time with their legs drawn up closely to the body. In their wild state they mostly frequent trees, where they are enabled to cling fast to the under sides of the leaves, and in this position to lie in wait for their prey, which consists of insects, small grubs and larvæ, and other minute creatures.

The Tree-Frog is rarely seen on the ground, except in

the breeding season, when, like other frogs, it makes for the water-side, and there deposits its eggs : the tadpoles are hatched late in the season, and require two months to attain their perfect form.

Tree-Frogs change their skin from time to time, and like the toad, they swallow the old skin on casting it. They are exceedingly tenacious of life, and have been known to be frozen up in ice without perishing. A gentleman who kept one for some time in a glass jar, used to feed it with flies : the Frog rarely noticed the fly so long as it remained quiet, but the moment it began to buzz, sprang upon it, and catching it dexterously in the mouth, swallowed it. It was observed always to become darker in hue when about to change its skin, and to grow in a manner torpid, recovering its light colour and its spirits when the change was over. It appeared to be sensible to musical sounds, for on a piano being played in the room where it was kept it began croaking in an excited way.

There are other Tree-Frogs besides the above. One is the Savannah Cricket Frog, of America, which climbs to the topmost branches of trees, and there chirps like a cricket during the night ; and another is the Bi-coloured Tree-Frog, of Brazil and Guiana, which is remarkable for the rich green of its upper parts, contrasting with the white tinged with rose-colour of the parts below.

THE AXOLOTL.

THE Axolotl is a singular creature, somewhat resembling the water-newt in form. There has been much discussion from time to time concerning it, some writers contending that it is a fully matured animal, and others asserting that it is but the tadpole of a much larger animal of the frog kind. Cuvier, who first adopted

the former view, subsequently altered his opinion, and acknowledged that the latter view is correct.

When the Spaniards first conquered Mexico, they found the Axolotl in great abundance in the lake which surrounded the city, and at that time it furnished to the inhabitants, as it still continues to do to their successors, an agreeable and much-esteemed article of food,



the flesh tasting like that of the eel. It is to this day commonly sold in the markets of Mexico, and is considered a luxury. It is prepared for the table by stewing, and is served with savoury sauce.

In size the Axolotl measures about eight or nine inches. Its colour is a deep brown, mottled all over on body, limbs, and tail, with numbers of small round

black spots. Both head and body are proportionably broader than in the generality of reptiles, and but for its long tail it might be compared in form to a large frog. It is furnished with gills, three on each side, which are prolonged into processes equalling the fore-legs in length, and curiously ramifying like branches of trees ; there are four openings from the gills into the mouth. The legs are short, but completely developed, and the toes are long, slender, without webs and without claws. The tail is flattened at the sides, like that of the common water-newt, and surrounded on the upper and under surfaces by a thin membranous fin, extending up the back towards the shoulders ; the length of the tail nearly equals that of the body.

THE WATER-NEWT.

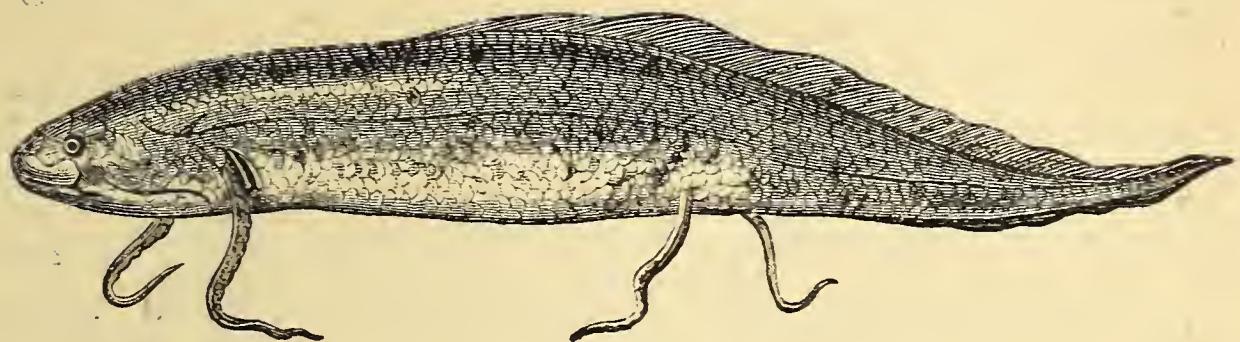
THE Water-Newt is familiarly known in this country, and, indeed, throughout the whole of Europe, as well as in Western and Northern Asia. It is of a dark olive colour on the back, orange-coloured beneath, and is spotted over with round black spots, the sides being dotted with white. It is about six inches long, the flat compressed tail forming half of its entire length. Wherever there are ponds or ditches, the Newt, or, as it is often called by country people, the Eft, is to be found, and is often discovered lying motionless on the surface, with its limbs extended and its toes stretched out as though it were dead ; nor is it very quick in moving off when disturbed. It makes no use of its legs in swimming, but turns them backwards, being propelled in the water by its tail. On the land it makes but slow progress, creeping along feebly on its small feet. The Great Water-Newt is a voracious animal, devouring all kinds of aquatic insects which come in its way, as

well as tadpoles and the young of a smaller species of Newt. The male differs from the female in having a toothed crest running along the back in the spring of the year, which crest it loses in the winter ; the female never has any crest. Young Newts are hatched from eggs deposited by the mother on the leaves of aquatic plants, to which they are fastened by a glutinous sub-



stance. They leave the egg when it has been laid about a fortnight, and are then minute tadpoles about half an inch in length. Their tadpole state continues about eleven weeks, during which time they breathe through their gills, and grow very rapidly. About the twelfth week they arrive at their perfect state, their gills disappear, and they breathe atmospheric air.

THE LEPIDOSIREN, OR MUD-FISH.



THIS curious creature belongs to an order of animals which seems to stand midway between the reptiles and the fishes ; and zoologists have not determined to which class they belong.

The Lepidosiren is found in Africa, where its home is in the bed of a muddy river, which becomes dry in the summer, and baked by the sun almost to the hardness of stone. The animal would, of course, perish for lack of moisture, were it not provided with the means of self-preservation. When the warm season has fairly set in, and the water begins to grow shallow, the Lepidosiren digs for itself a hole in the muddy bottom, and, burying itself to a certain depth, curls round in a circle, and thus awaits the return of the rainy season, which will fill the river again. After it has thus shut itself in, a slimy substance exudes from its body, which substance lines the walls of its cell, and renders its temporary dwelling more secure. Here the Mud-fish remains in a torpid state for months, until the rains return, and, penetrating to its abode, dissolve the muddy prison walls and restore it to life and action.

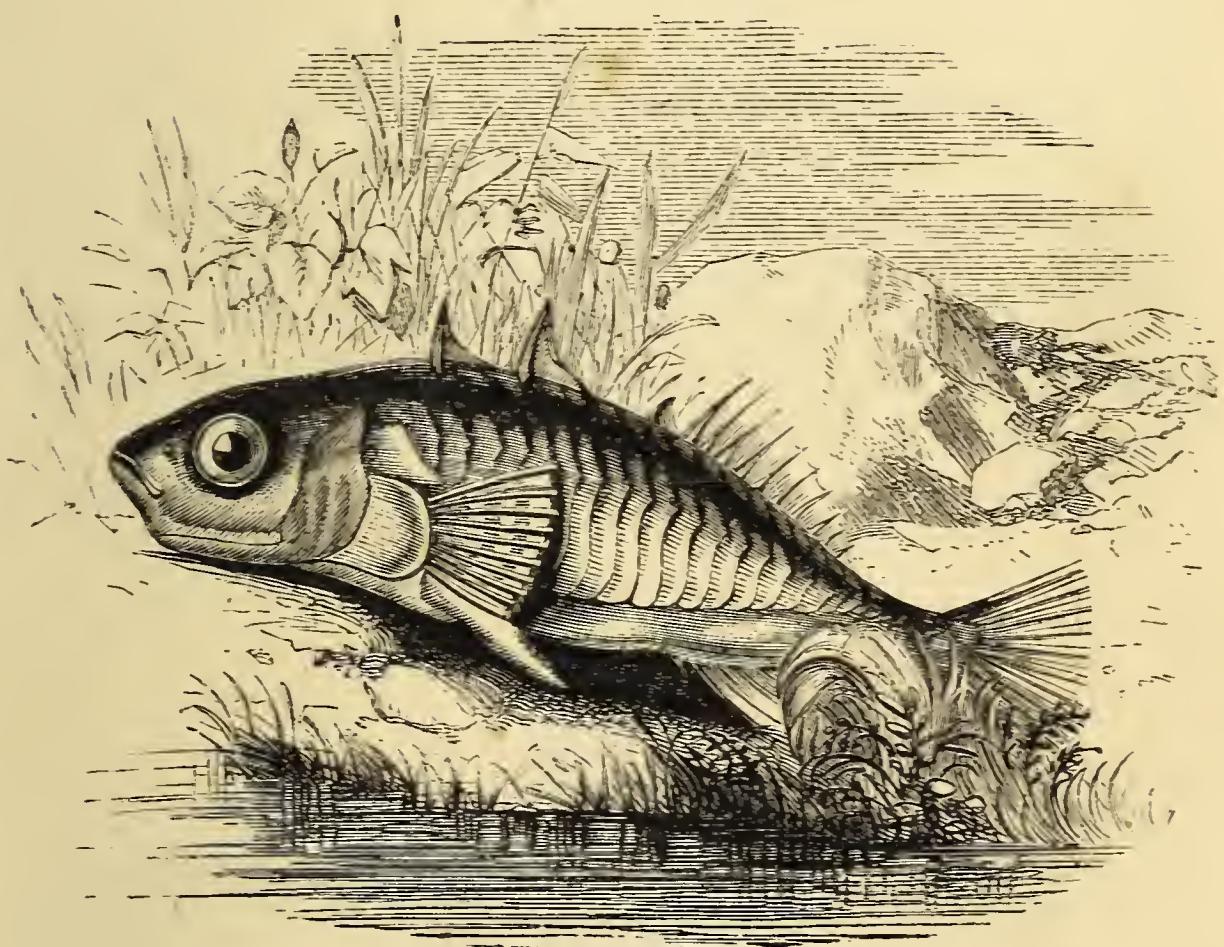
The form of the Mud-fish may be likened to that of an eel, but it is supplied with four slender projections in the place of limbs, and which are analogous to those of newts, salamanders, and other reptiles of a like class ; but they are not true limbs, and are of little use, if any, in locomotion. Its body is covered with scales, em-

bedded in the skin, and hardly visible in the living specimen. Its flesh is esteemed by the natives of the country where it is found, who are in the habit of digging it up and cooking it for food.

Numbers of these animals have been brought to this country, where some of them have lived for several years, affording opportunities for the study of their habits and propensities. One, which was kept in the Crystal Palace in a tank of tepid water, and fed upon pieces of raw beef, used to rise to the surface after the food offered to it, and carry it to its lair to eat. Its mode of eating was most singular—its habit being to masticate the meat three times before swallowing, and to expel it sharply from the mouth between the several masticating processes. When it first arrived, this specimen was ten inches in length, and weighed but a few ounces. By some means it managed to escape from its tank into the large basin, and here it made sad havoc among the gold fish, numbers of which it killed by biting a mouthful from each, and leaving them thus mutilated to perish. On being again confined, it was fed with frogs, and these it devoured entirely, leaving no vestige of them. Under the idea that it would resort to its natural habit of burrowing if it had the means, a quantity of clay was put into its tank; but the animal took no notice of it, feeling probably too comfortable in its quarters to require any change, and showing that it could well dispense with its muddy bed in circumstances where it had no occasion for such a protecting shelter. It thrrove so well on the frog diet that in the course of three years it grew from ten to thirty inches in length, and increased in weight from an ounce or two to six pounds and a quarter. This interesting specimen died at last through accidental neglect: the fire that warmed the water in which it lived was one night suffered to go out, and in the morning the poor Mud-fish was found dead—starved with the cold.

FISHES.

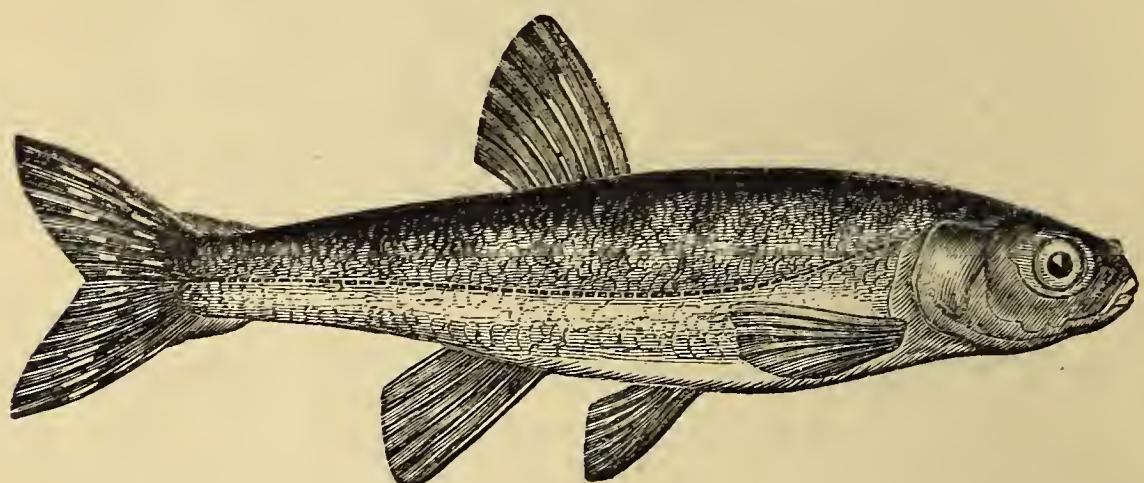
THE STICKLEBACK.



Of the Sticklebacks there are several species found in the ponds and streamlets of this country. The most common is the Three-spined Stickleback, so called from its having three spines on its back. It is from two to three inches in length, is olive-coloured above, and white beneath, and has its body protected by shield-like plates. The attention of naturalists has of late years been directed to this little fish, owing to the discovery of its nest-making habits. It is now well known that, as spawning time comes near, the male Stickleback

prepares a nest for the reception of the young, in which nest the female lays her eggs. The nest is formed of vegetable fibres and small twigs, partly retained in position by sand, and partly cemented together by the sticky substance of the fish's body. The male guards the young during infancy, and has been seen to carry them home in his mouth, when they had wandered too far from the nest; and if any strange fish approaches too near, he immediately assails the intruder and drives him away. The Sticklebacks are very pugnacious, and, even in confinement, have been observed to fight with the utmost fury, and even to kill each other: but it is the males only who are thus quarrelsome, the females never taking any part in the fray. The other species of this genus are the *Rough-tailed*, the *Half-armed*, the *Smooth-tailed*, the *Short-spined*, and the *Ten-spined* Sticklebacks, all of which are said in their habits to resemble each other.

THE MINNOW.



THE Minnow is a beautiful little fish, rarely found above two and a half inches in length, and abounding in the small clear streams and rivulets of England. During the late autumn and winter months it is not seen, but either conceals itself in holes in the overhanging bank, or buries itself in the gravel of the bottom. It varies in appearance according to the season of the

year, but when in good condition, which is at spawning-time, the top of the head and back are of a deep olive, the sides of a paler hue, and richly mottled and golden spotted and starred like those of the trout, the under parts being of a pinkish white. The Minnows have numerous enemies among the larger fishes of the brook; the pike will devour them greedily, and there is no sunken bait which the angler finds so killing as a Minnow, when he is trolling for perch or the larger trout, after a day of summer rain. The flavour of the Minnow when cooked is delicate, and quite equal to that of the white-bait; but it is rarely to be caught in sufficient quantities to form a dish for the dinner-table. It is a pleasant sight to watch the Minnows disporting in a clear pool beneath the shade of the water-lily leaf on a sunny day. They are fond of hovering round the stems of aquatic plants, and wherever there is woodwork under the water, thither the Minnows will resort. They feed on grubs and larvæ, and gnats and small flies.

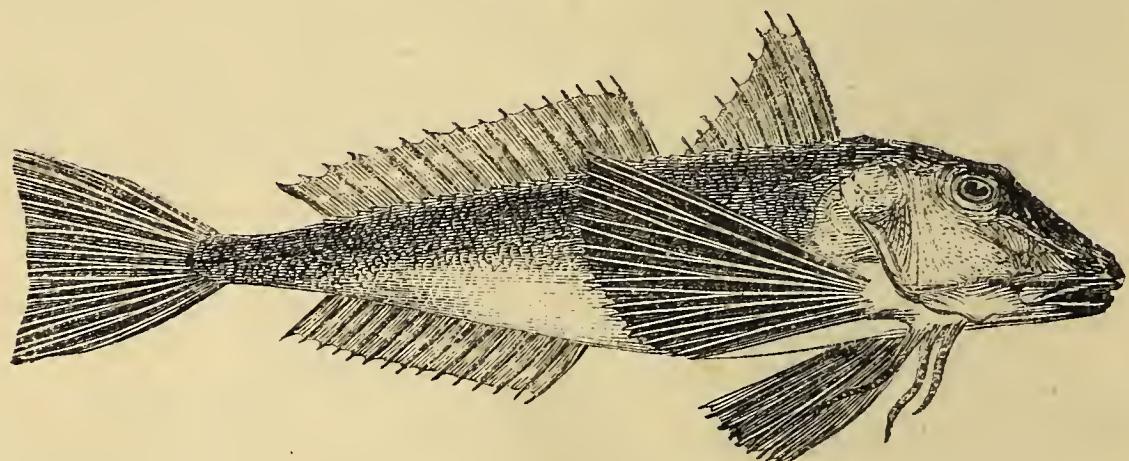
THE RED GURNARD.

THERE are several species of Gurnard inhabiting the English seas, among which the Red Gurnard is perhaps the best known, from its remarkable colour, which makes it conspicuous in the markets and on the street-stalls of the fishmonger. It is called the Cuckoo Gurnard, from the fact that where taken out of the water it utters a sound bearing a rather fanciful resemblance to the note of the cuckoo. It is a very common fish, and when young numbers of them may be found in the rock-pools of the shore, where they present a pleasing spectacle, from their bright colours. They are ground fishes, generally haunting the vicinity of the bottom, where they feed on crabs, lobsters, and other crustaceous animals; but they do not confine themselves to such diet; on the contrary, they are known to follow up

the shoals of young herrings, which they devour in immense quantities.

The usual method of fishing for Gurnet is by the trawl-net, a long conical net dragged along the bottom by a boat under sail. Sometimes they are caught by hook and line, but when drawn up on the hook they are dangerous to handle, owing to their prickly scales and sharp spiny fins, which they erect suddenly on being touched, seriously lacerating the hands of the incautious angler. Old fishermen are accustomed to ward off this danger by stunning the fish by a violent blow before disengaging the hook from its mouth.

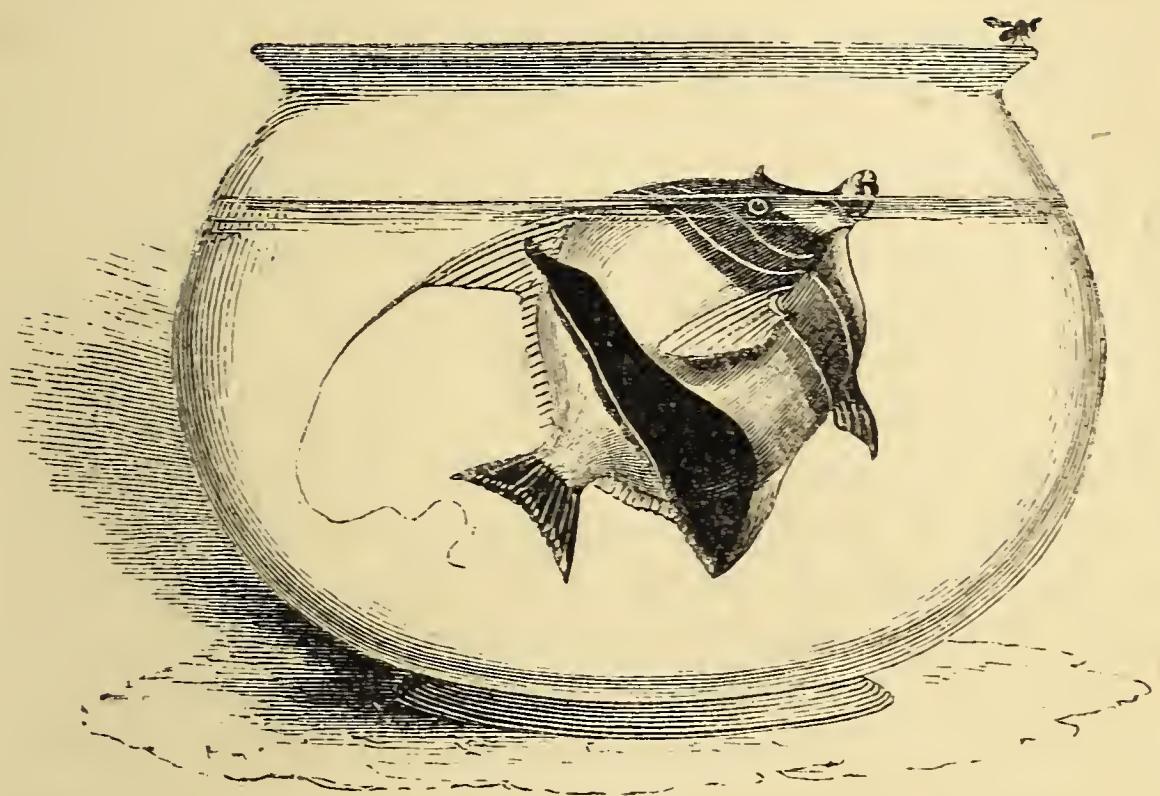
The name Gurnard is said to be derived from a French word signifying to growl, or scold, and it has reference to the faculty, possessed by all the species of



Gurnards, of giving utterance to vocal sounds: thus while the Red Gurnard utters a double note like that of the cuckoo, the Grey Gurnard is called the Crooner, from the crooning or hollow humming sound which it is said to produce while swimming, with its prickly snout dividing the surface of the water.

The colour of the Red Gurnard is a bright rosy red on the back, and a silvery white on the sides and under-parts. When alive in the water, these fish are exceedingly beautiful, their brilliant hues being heightened by the water, and flashing like flame under the rays of the sun. These splendid colours do not endure long after the fish has been removed from the water.

THE CHÆTODONS.



THE Chætodons are a family of spinous-finned fishes abounding in tropical seas, and interesting from their peculiar forms and beautiful colouring. They are exceedingly thin, and some of them almost circular in form. They have long and slender teeth, ranged in close rows like the bristles of a brush, and to this they owe their name of *Chætodon*, signifying bristle-tooth. Their mouth is small, and generally projects in a pointed snout. The fins are usually very large, particularly the dorsal and anal ones ; in the platax the fins are enormously developed. The beauty of these fishes is a source of universal admiration : "In the Chætodons," observes an eloquent writer, "the seas of the torrid zone possess animals not less ornamented by the hand of Nature than the countries whose shores are bathed by these waters. If the hot countries of Africa and America have among their feathered tribes their humming-birds, their cotingas, and their tanagers, the intermediate seas support myriads of the finny race still

more brilliant, whose scales reflect the tints of metals and precious stones, heightened in effect by spots and bands of a more sombre hue distributed with a symmetry and variety equally admirable. The genus *Chætodon* has many species, in which Nature appears almost to have disported herself by clothing them in the most gaudy manner. Rose, purple, azure, and velvety black are distributed along the surface of their bodies, in stripes, rings, and ocellated spots, on a silver ground ; nor are the beauties of these fishes lost to man, or confined to the depths of the ocean. They are small, and usually remain near the shore, between the rocks, where there is but little water. Here they are incessantly sporting in the sunbeams, as if for the purpose of displaying the ornaments they have received from Nature."*

The Beaked *Chætodon* (*Chelmo rostratus*) has the mouth remarkably elongated, and employs it in a curious way, somewhat as boys make use of pea-shooters. Feeding much on flies and insects, it does not wait until these drop upon the water ; but if it sees one resting on a leaf or blade of grass overhanging the flood, it approaches gently, with its snout only above the surface, and when within the distance of three or four feet ejects from its tubular mouth a drop of water with such accuracy that the unconscious victim is knocked off its perch, and the next moment is snapped up by the marksman. This clever trick the fish will repeat in captivity, and on that account it is kept by the Chinese inhabitants of Java, and also by the Japanese, as an amusing pet. They place the fish in a large bowl, and divert themselves by offering it a fly on the end of a rod, and seeing it strike its prey into the water. This fish is reckoned very handsome ; it has fine brown cross-bands, edged with darker brown and white across its head and body, and in the middle of the dorsal fin is a large round black spot edged with white.

Another of the *Chætodons*, also known as a marks-

* Griffith's Animal Kingdom, x. 322.

man, is the Archer Fish (*Toxotes jaculator*). It is not so handsome as the one above described, its general colour being green, with dark brown bands across the back. It is remarkable for the great length of its lower jaw, by aid of which it projects its watery missiles.

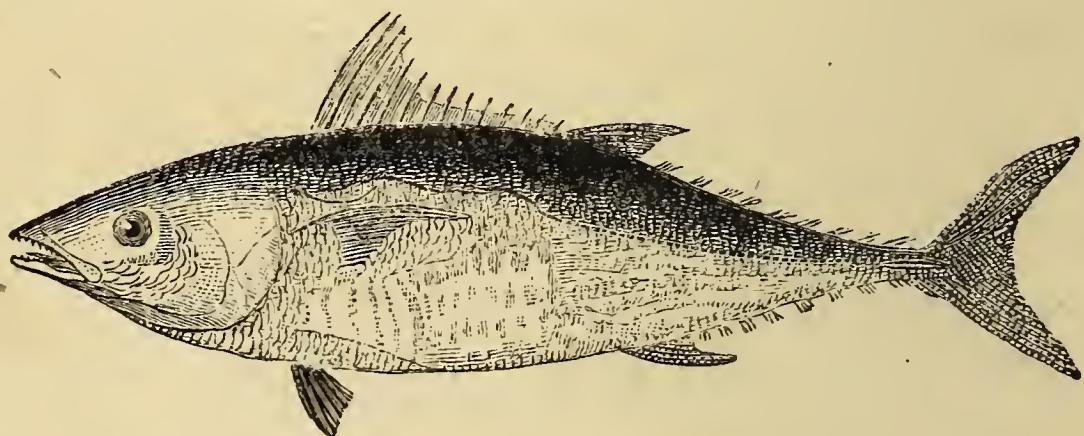
The Chætodons are a very numerous family: as many as a hundred and ninety-four of them have been recognised; they swarm in the tropical seas all round the globe, never, it is believed, venturing far from the land.

THE TUNNY.

THE Tunny is a large fish closely allied to the mackerel, being of the same family (the *Scomberidæ*): in size, however, it far exceeds the mackerel, its average length being about four feet, while specimens are often caught measuring as much as six or seven feet. Both in form and colour it sufficiently resembles the mackerel, the upper part of the body being a very dark blue, and the lower portions of a lustrous silvery grey and white. It is much valued as food by the various peoples dwelling on the coasts of the Mediterranean Sea and the Adriatic Gulf, being eaten both fresh, salted, and cooked in a variety of ways: the different parts of its body are said to resemble different kinds of butcher's meat, so that beef, veal, pork, &c., are all supplied from the flesh of the Tunny. It is also made into pies, which have the merit of keeping good for several weeks.

One of the pastimes of sailors in the Mediterranean, during the summer season, is that of harpooning the Tunny, and this sport is often witnessed by travellers on their passage across this inland sea. The harpooner seats himself astride on the bowsprit of the vessel, having his weapon, to which a line is attached, in his right hand, raised ready to strike; on the approach of the fish he launches his weapon, and if he is fortunate

or skilful enough to pierce it, it is drawn in by the line, and securely lifted on board. Comparatively few of these fish however are harpooned, the regular mode of fishing for them being by means of nets: the nets are seine nets, similar to those used in the capture of mackerel, but of stronger fabric, and they are employed in precisely the same way—the fish being enclosed in the net and then drawn ashore. A more wholesale way of catching them is by the employment of the “mandrage:” this is a large inclosure formed by many nets united together, and divided into several compartments. The outer and largest chamber of nets is so placed as to intercept the shoal of Tunnies as they pass along the coast; from the first chamber they are driven into a second, which is



smaller, and so on from one chamber to another, until they enter the last and smallest chamber, which, unlike the others, has a net stretched over the bottom. By means of ropes, this ground net is drawn up, and the fish are thus forced to the surface, where they are speared, or stunned with blows, and, in spite of their furious struggles for life, are lifted into the boats of the fishermen. The Tunny fishery is a considerable source of wealth to some of the adventurous populations of the Mediterranean coast; it commences about the middle of May, when the shoals of fish are seen moving along the shores to their spawning-places. Like the pilchards of the Cornish seas, they are eagerly looked for by persons appointed to watch for their appearing, and

their arrival, which is duly signalled by the watchers, affords employment to multitudes.

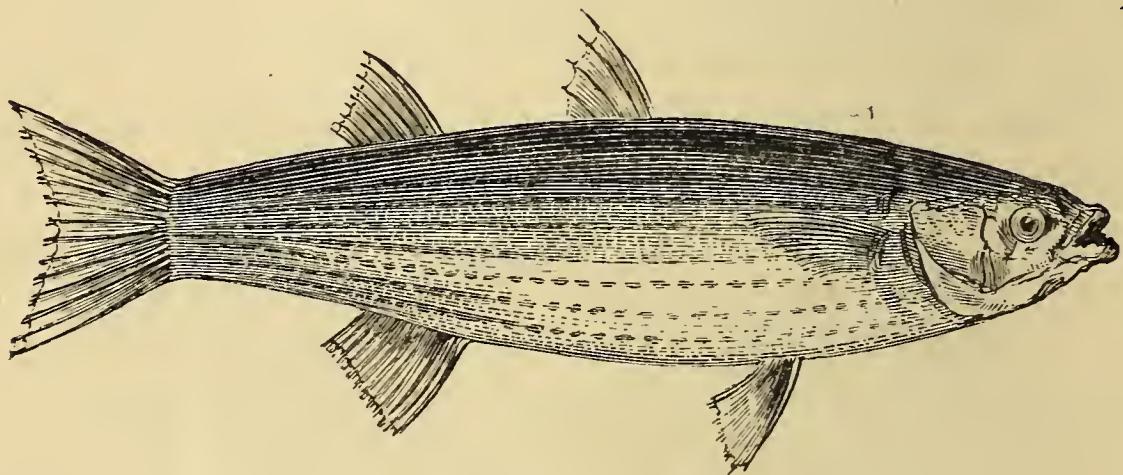
The food of the Tunny consists of herrings, pilchards, and other small fish. It is found off the Spanish and French coasts on the Atlantic side, as well as in the Mediterranean, and sometimes visits our own coasts, but never in any great numbers.

THE GREY MULLET.

THE Grey Mullet is the common Mullet, found not only on our English coasts, but spread over all the coasts and estuaries of the temperate and tropical regions. It is a handsome fish, graceful in form and outline ; its colour is a deep blue-grey on the back, and white on the sides and under-parts, which gleam with silvery lustre ; lines of dark grey run along the sides. The full-grown Mullet averages about fifteen or sixteen inches in length, though individuals are sometimes met with approaching two feet in length. They are caught and sold of all sizes, being much prized for their flavour.

The habits of the Mullet are peculiar. They are fond of feeding on the bottom, and rooting in the soft mud, and seem to prefer for their feeding-grounds those places where the fresh water of rivers and streams mingle with the salt sea. Thus in creeks and inlets of the shore, where small streams empty themselves, Mullets are likely to be found ; they are sometimes caught in such places by nets placed so as to cover the bottom, the nets being suddenly lifted, bringing the fish to the surface. When enclosed in the seines of the fishermen, the Mullets make the most extraordinary efforts to escape : they first examine the net in all parts, and if any outlet can be discovered, they will all dart through it, until not a single fish is left behind. Failing to find any outlet in the net, they then make the

attempt to leap over the head-rope and gain the open sea ; in this way shoals of them are seen to escape after they have been enclosed, for if one of them succeed in leaping over, the rest are sure to follow. To prevent this, the French fishermen adopt the plan of spreading straw on the surface of the water, within the enclosure of the net ; the fish leaping over the straw, and finding themselves still imprisoned, do not repeat the attempt. In the Mediterranean the fishermen adopt the practice of surrounding the first net with a second one. The habit of leaping out of the water when imprisoned seems to be instinctive in the Mullet ; when accidentally



enclosed in tidal locks, they often throw themselves out on to the banks, and even the smallest Mullet confined in a tumbler of water will leap out after a short time.

Mullets are fond of an alternate change from salt water to fresh : they will however live and thrive in fresh water, and have been known to increase largely in weight when confined in fresh-water ponds. It was formerly supposed that the Mullet was not a carnivorous fish, but that it lived solely upon vegetable substances and oily matter found at the bottom or on the surface of the water. That supposition, however, does not appear to have been well founded, because the common Grey Mullet is often caught by anglers who use the artificial fly, which the fish of course imagines to be a

real one ; while another species of Mullet common in Belfast Bay has been found to contain in its stomach a mass of small univalve and bivalve mollusks, large enough to fill a breakfast-cup.

Mullets are never found at any great distance from land ; they will swim with the tide far up the rivers, but will also return with the tide. They spawn about Midsummer, and in August their young, then about an inch long, are seen entering the fresh-water streams, advancing and receding as the tide flows and ebbs.

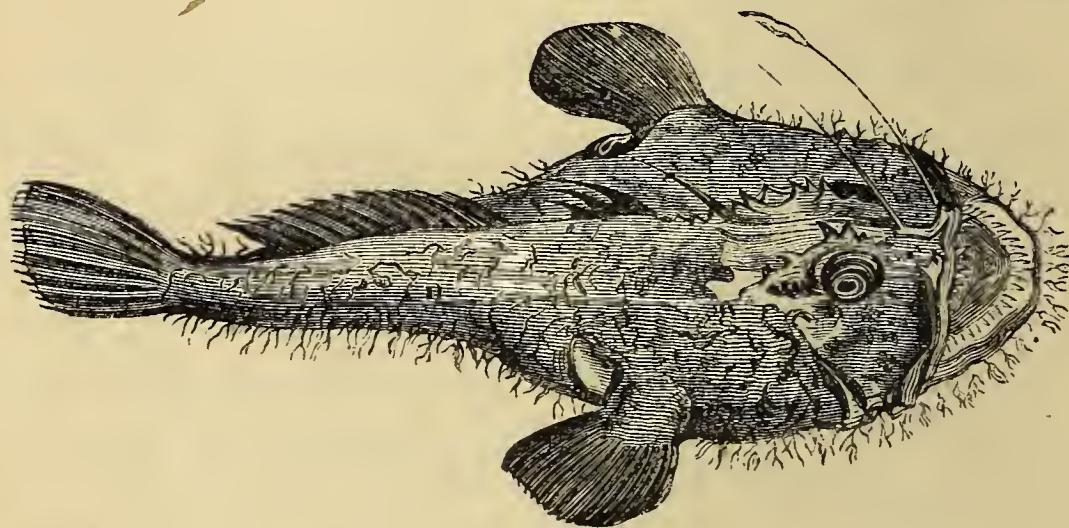
THE FISHING FROG, OR ANGLER.

THIS cunning and voracious creature, which has obtained for itself the name of Wide-Gab, from its capacity of swallow, is not uncommon on our coasts, and is well known among fishermen. Its head is broad, flat, and toad-shaped ; it has a huge gaping mouth set with rows of sharp teeth ; its eyes are on the top of its head, where also it has long wormy-looking spines ; and its pectoral fins are mounted on a sort of arm, so that it is able to walk along wet ground almost like a quadruped. Its general colour is brown above and white below, the tail being nearly black. This singular animal has obtained the name of Angler, from its habit of burying its body in the sand or mud of the bottom, leaving only its wormy filaments exposed to view, and thus lying in wait until some passing fish, attracted by the seeming worms, comes to feed, and is snapped into the jaws of the lurking foe.

The voracity of the Fishing Frog is almost without a parallel even among the greedy inhabitants of the deep. It will dash at fish which have been hooked, and is sometimes drawn up with them ; it will gorge the cork floats on lines and nets ; and when it is taken in a net with other fishes, it is quite heedless of its own

capture, and is busy in devouring its fellow-prisoners. The average length of the Fishing Frog is about three feet, but individuals have been met with of four and even five feet in length.

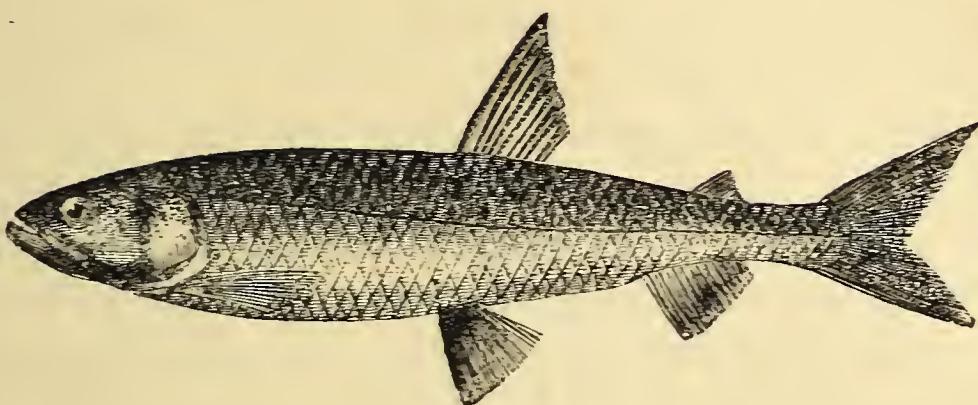
A curious illustration of the voracity of fishes in general, and of the Fishing Frog in particular, was given by Dr. Houston in a lecture delivered before the Zoological Society of Dublin. Pointing to a preparation which he had obtained from the Royal College of Surgeons, he said : "This preparation will serve as an illustration of the voraciousness of their habits. Here is the skeleton of a Frog Fish, two and a half feet in



length, in the stomach of which is the skeleton of a cod-fish two feet long, in whose stomach again are contained the skeletons of two whittings of the ordinary size ; in the stomach of each whiting there lay numerous half-digested little fishes, which were too small and broken up to admit of preservation."

Greedy as is the Frog Fish, he is not half so mischievous to the fishermen as the dog-fish, who interferes at times most destructively in their operations. The Frog Fish makes war on the dog-fishes and devours as many of them as he can catch ; and on this account fishermen on those parts of the coast where dog-fishes abound consider him their friend, and will release him when he is caught in their nets.

THE SMELT.



THE Smelt, known also by the name of Sparling or Spirling, is a little fish remarkable for its clean and delicate appearance. It belongs to the same family as the salmon, trout, and grayling, and like them is much in request for the table. It has a peculiar flavour, and emits a fragrant odour resembling that of cucumber. In colour it is olive grey above and a lustrous silvery grey on the sides and under-parts. It is found in the sandy and pebbly tracts along our southern, eastern, and western coasts, and frequents the mouths of rivers, which it ascends for the purpose of depositing its spawn. Its food consists of young shrimps and others of the smaller crustaceous and testaceous animals. It will live in fresh water, apparently without any inconvenience, and has been kept in garden ponds, surviving through the winter although the ponds have been frozen over.

The Smelt-fishing begins in March, and is carried on very much at night. The smelter carries a lighted torch at the side of his boat near the surface of the water: the light attracts the fish, which are captured by means of a wide-spreading casting-net thrown in as near to the light as possible. It is rare that any great haul is made, only a few of the active little creatures being generally caught at a single cast. They are also caught in the day-time by means of trawl-nets, which are let down in shallow water and then drawn up on the shelving beach.

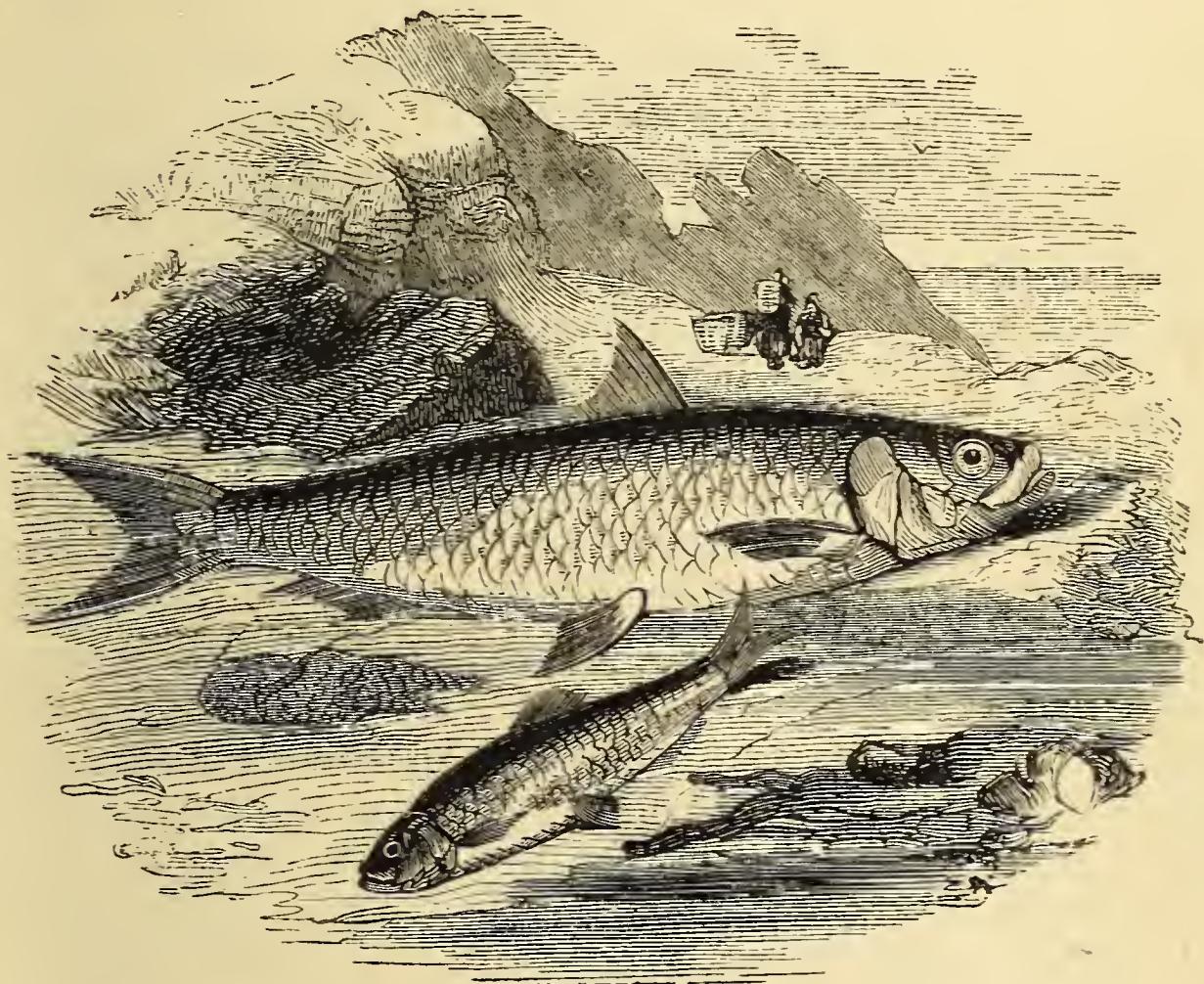
Smelts are sold in the London markets of various sizes, from the length of five or six inches up to nine or ten inches. They are a favourite dish with invalids, and are never to be bought cheap. It frequently happens that persons in search of the true Smelt purchase the Sand Smelt instead. The Sand Smelt is in many places more plentiful than the Smelt, but it is not equal to it in flavour, though it has the same peculiar odour of the cucumber. It is much in request among the fishermen, both for bait and for sale. It is caught in nets drawn along the sands, or by a circular net supported on iron hoops and sunk to the bottom with baits attached to it. Now and then the net is raised suddenly out of the water and the catch removed. The Sand Smelt is of a very pale pink colour, with a belt of shining silvery white along the sides, and a number of black spots upon the upper part of the back and head. The length of the full-grown fish is from six to seven inches.

THE PILCHARD AND THE SPRAT.

THE Sprat is one of the smallest of the salt-water fishes which are used for the food of man. It is from five to six inches long, is shaped like the herring, and was formerly thought to be the young of that fish; but it is broader in proportion to its length than the herring, is in other respects distinguished from it, and is now known to be a distinct species. Sprats visit the coasts of Britain in immense shoals early in November, and are taken in the largest quantities at night or in gloomy weather. From their abundance they can be sold at a low price, and as they are relishing to the palate, they form an agreeable dish for the poor throughout the winter months. Occasionally it has happened, when dark stormy weather has prevailed for many days, with the wind blowing towards the shore, that the

shoals of Sprats have been driven on the beach, and there left, covering the coast-line for a considerable distance. When too abundant for consumption as food they are often used as manure, and scarcely a year passes in which tons of Sprats are not thus applied to fertilize the land.

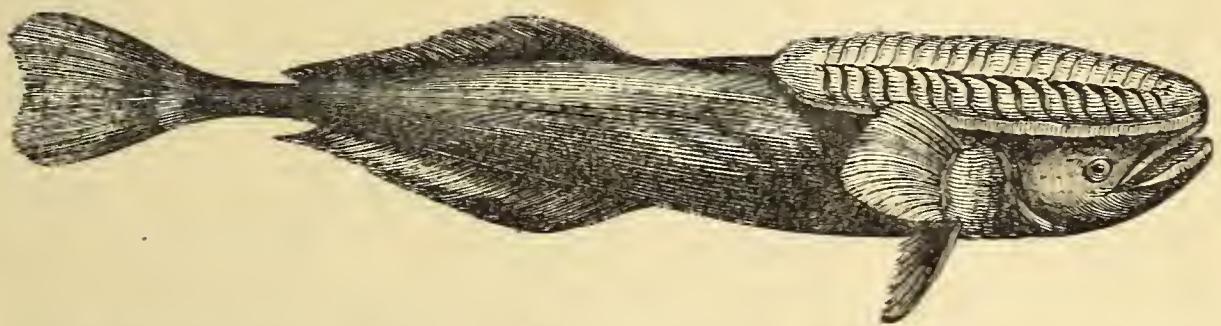
The Pilchard is rather smaller than the herring, but is thicker and broader, and has larger scales. It is found on various parts of the English coast, but is caught in greatest abundance at St. Ives, on the coast



of Cornwall, where the Pilchard fishery gives employment to a considerable number of the inhabitants. The shoals of fish approach the land about the end of June or beginning of July. They are waited for and watched by men called "huers," who take their station on some high land or rock overlooking the sea, who raise the cry "Heva! heva!" when the fish are first seen, and who direct by signals the operations of the fishermen.

in their boats. The advance of a shoal of Pilchards can be discerned from a great distance ; it is always attended by flocks of sea-birds, who prey upon the fish ; while the water where the shoal lies appears, when seen from a height, of a deeper hue. The fishery is a most animating scene. The fish are first enclosed in large nets called seines ; these are drawn close, until the fish are so crowded that they can be dipped out with smaller nets and thrown into boats, which when full are rowed to the land. From the boats the fish are taken to the curing-houses, where they are cured by being ranged between layers of bay-salt ; and the oil they contain runs from them, and is collected in barrels to be sold. In some favourable seasons as many as fifty thousand hogsheads of Pilchards—worth £100,000—have been caught by the Cornish fishers. The greater part of them are exported to Spain, and to other Roman Catholic countries in the Mediterranean and the Adriatic. Besides being an advantage to Cornwall by furnishing the means of this foreign trade, the Pilchard fishery is a great boon to the poorer inhabitants, who are enabled by it to lay in a stock of wholesome provisions for the winter. When the fishing begins, and the cry of “Heva !” is once heard, it is borne from mouth to mouth with amazing rapidity all through the inland districts, and in a brief time the poor people are seen hastening from all directions towards the coast, with their carts, barrows, baskets, or anything that will hold the fish, of which at this season they can purchase a large quantity for little money, or may gather them from the beach at the cost of their labour alone. Experience has taught them how to preserve them for after use, and many of the poor people would be sadly off in the winter time without them.

THE SUCKING-FISH.



THE Sucking-fish, or Remora, has been the subject of marvellous fables invented by ancient writers, and believed for many centuries, but which observation has shown to have no foundation in fact. It was supposed in old times that this little fish, which rarely grows to the length of nine inches, was able to arrest ships in their course by cleaving to their bottoms; and to this absurd supposition it owes its name *echenéis*, which signifies "shipholder." But though the Sucking-fish has no such wonderful powers as were formerly attributed to it, it is yet a sufficiently curious creature. It is furnished with a sucking apparatus placed at the top of its head (which apparatus is shown in the engraving), by means of which it can attach itself to any smooth surface so firmly that it can scarcely be removed against its will. It is found adhering to various objects moving in the sea, as to the timbers of boats and vessels, to the under sides of larger fishes and turtles, and even to the gigantic whale: one was found on the British coast adhering to the back of a cod.

What advantage the Remora derives from its sucking apparatus does not appear to be known, though it has doubtless been given to it for a wise and beneficial purpose; but according to some accounts mankind have turned it to their profit in an ingenious way: for "the natives of Hispaniola and Jamaica are described by the early Spanish writers as in the habit of using a species of this genus in fishing. The fisherman, carrying the Remora out in his canoe, attached around its

tail a slender line of great length, and threw it over-board. The instinct of the Remora impelled it to fasten on any fish that chanced to swim by, when the owner, hauling up the line, gradually drew in both fishes, the hold of the sucker pertinaciously retaining the prey in spite of all its efforts to escape.” *

The food of the Remora consists chiefly of small mollusks and crustaceæ: it is voracious in feeding, and may be readily taken with a hook baited with raw flesh; but the fisherman must be quick in lifting it out of the water, since if it fasten itself upon any firm substance it will not relax its hold. The flavour of this fish, when cooked, resembles that of the eel, but is more mild.

In colour the Remora is a dusky brown, darker on the back than on the other parts of the body, the fins being the darkest portions.

THE PEGASUS.

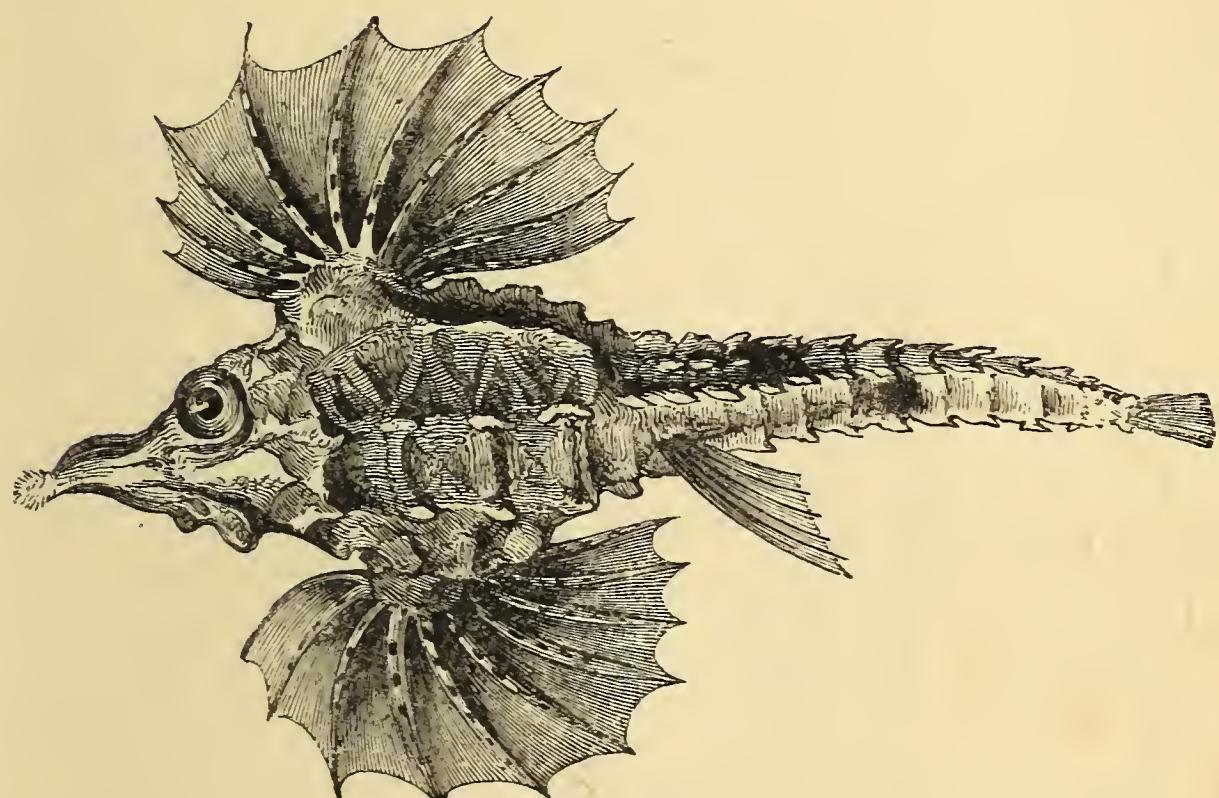
THE Pegasus, or Flying Horse, derives its name from the two large ventral fins, which in swimming assume somewhat the appearance of wings. It is furnished with a long snout serrated with short spines directed backward, and projecting far out over the moveable mouth. Its body is long, and in form in some degree resembles that of certain species of insects. It is an inhabitant of the Indian Seas, being found on the coasts of Java.

The Pegasus belongs to the order of the Lophobranchii, or crest-gilled fishes, so called from the form and position of their gills. Their bodies are cased in a kind of tough bony armour, which protects them effectually, and is admirably contrived to allow of their growth. They have very little flesh.

The habits of all the fishes of this order are peculiar

* Gosse's Natural History—Fishes, p. 270.

and interesting, especially those which relate to the propagation of their race. In almost all cases the male fish takes charge of the eggs, being provided with an apparatus adapted for the proper care of them. In some the eggs are deposited in pouches, or folds of the

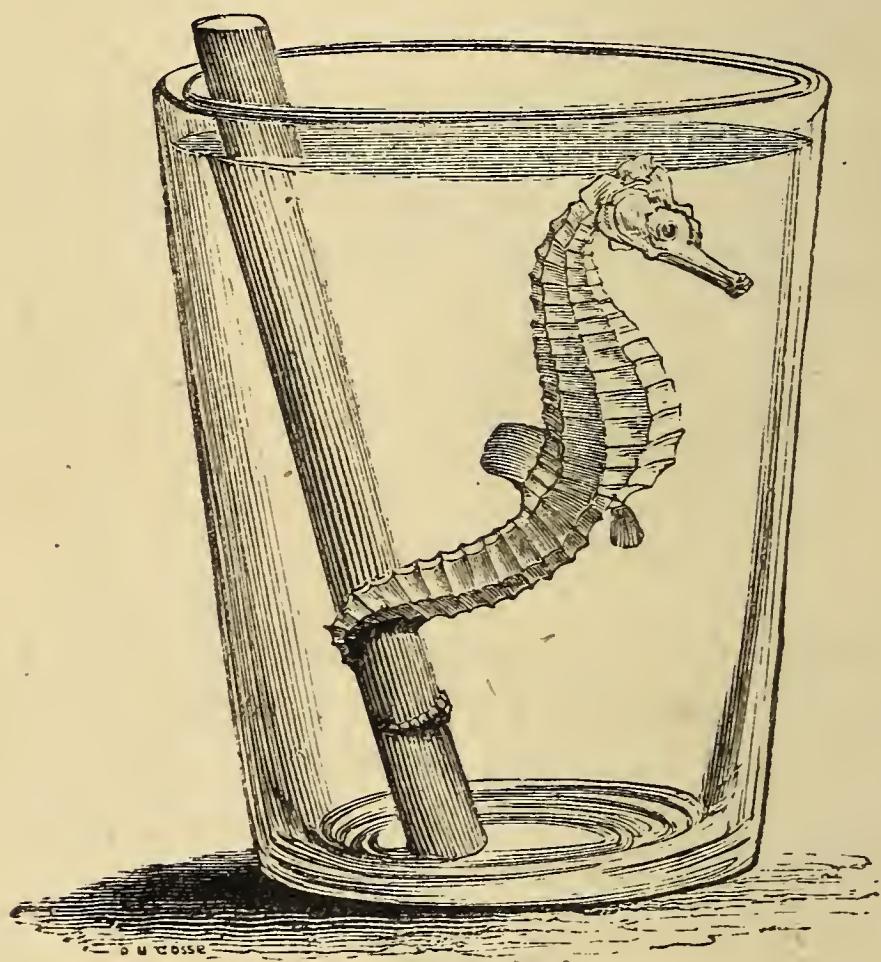


skin; in others they are lodged between the ventral fins; and in others again they are arranged in rows on the under part of the body: in whatever position they are placed, there they remain until the young are hatched and come forth from their prison.

THE SEA HORSE.

THE Sea Horse belongs to the family of the Syngnathidæ, and derives its name from the remarkable resemblance of its head to that of the horse, a resemblance which is increased from some points of view by the two ear-shaped fins projecting from the sides of the neck. It has but one dorsal fin, which is set far down on the back, and is capable of extraordinary motions, which have been compared to those of the

screw-propeller. Its tail is prehensile, and extremely flexible, and by it the animal attaches itself to any object which it is able to grasp. Its eyes, like those of the chameleon, are independent of each other, so that it has the power of looking at two objects at once. Its colour is a pale ashy hue, mingled with varying shades of blue, and gleaming in certain lights with iridescent hues playing over the body: the eyes are a pale yellow. It attains when full grown to the length



of five inches; it is common in the seas of many parts of Europe, and has been repeatedly captured on the British coasts: sometimes it is found curled up in oyster-shells.

“The habits of this species in confinement have been recorded by Mr. Lukis in an interesting manner, as observed in two individuals kept by that gentleman in a glass vessel of sea-water at Guernsey. They were both females, and at the time of the record had been

living in health twelve days in captivity, displaying actions and habits equally novel and amusing. 'An appearance of search for a resting-place induced me,' observes this gentleman, 'to consult their wishes, by placing sea-weed and straws in the vessel: the desired effect was obtained, and has afforded me much to reflect upon in their habits. They now exhibit many of their peculiarities, and few subjects of the deep have displayed, *in prison*, more spirit or more intelligence. When swimming about they maintain a vertical position; but the tail is ready to grasp whatever meets it in the water, quickly entwines in any direction round the weeds, and, when fixed, the animal intently watches the surrounding objects, and darts at its prey with great dexterity. When two approach each other, they often twist their tails together, and struggle to separate, or attach themselves to the weeds: this is done by the under part of their cheek or chin, which is also used for raising the body when a new spot is wanted for the tail to entwine afresh.''"*

The food of the Sea Horse is supposed to consist of minute animals or the spawn of fishes sucked into the tubular mouth, in the same manner as water is drawn into a syringe.

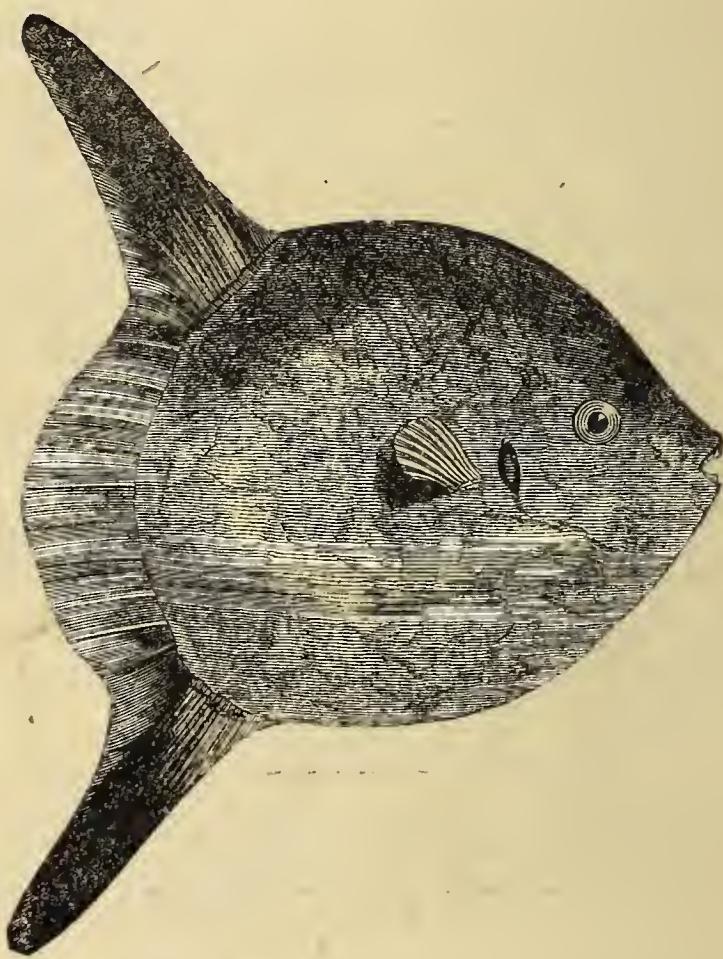
THE SUN FISH.

THIS is a singularly strange-looking creature, presenting the appearance of the head of a fish cut off at the shoulders, and having a fin supplied at the severed portion. It derives its name from the brilliant shining of its skin when first taken out of the water, and its circular form. In the warm seas where these fishes most abound they are usually captured by means of the harpoon, and those of a large size will sometimes

* Gosse's Natural History—Fishes, pp. 282-3.

struggle desperately and with astonishing force in their vain attempts to escape. Their flesh is white, and is considered by sailors to be well flavoured, and to be comparable to that of the skate: a considerable quantity of oil is expressed from the liver, and is supposed to be a sovereign remedy for sprains and bruises.

In warm and calm weather the Sun Fish frequents the surface of the water, and it is at such times that it is generally caught, its elevated dorsal fin betraying it to sailors on the look-out. Those which have been



caught on or near the British coasts have usually been found floating on the side, as if in a dying state, and have allowed themselves to be lifted into a boat without making any resistance.* In stormy seasons the Sun

* A large specimen of the Sun Fish was caught in September, 1864, off the Start Point by the crew of the yacht "Night Thought." The fish was discovered apparently asleep, its back fin raised above the water. It was captured with difficulty after an exciting chase of more than an hour, and after repeated attempts on the part of the fish to upset the boat of its pursuers by getting under it. On being hauled on board the yacht it was

Fish sinks down in the bed of the sea, and is supposed to feed on the seaweeds of the shallower waters.

The colour of the Sun Fish is a dusky brown, dark on the upper part and shading off to a silvery grey in the lower parts. It sometimes grows to a great size, and has been known to measure six feet in length. There are several species of Sun Fish—one of which, exceedingly rare, is the Oblong Sun Fish, much resembling the above, but of a more elongated form ; this species is sometimes encountered off the Cape of Good Hope.

THE SAW FISH.

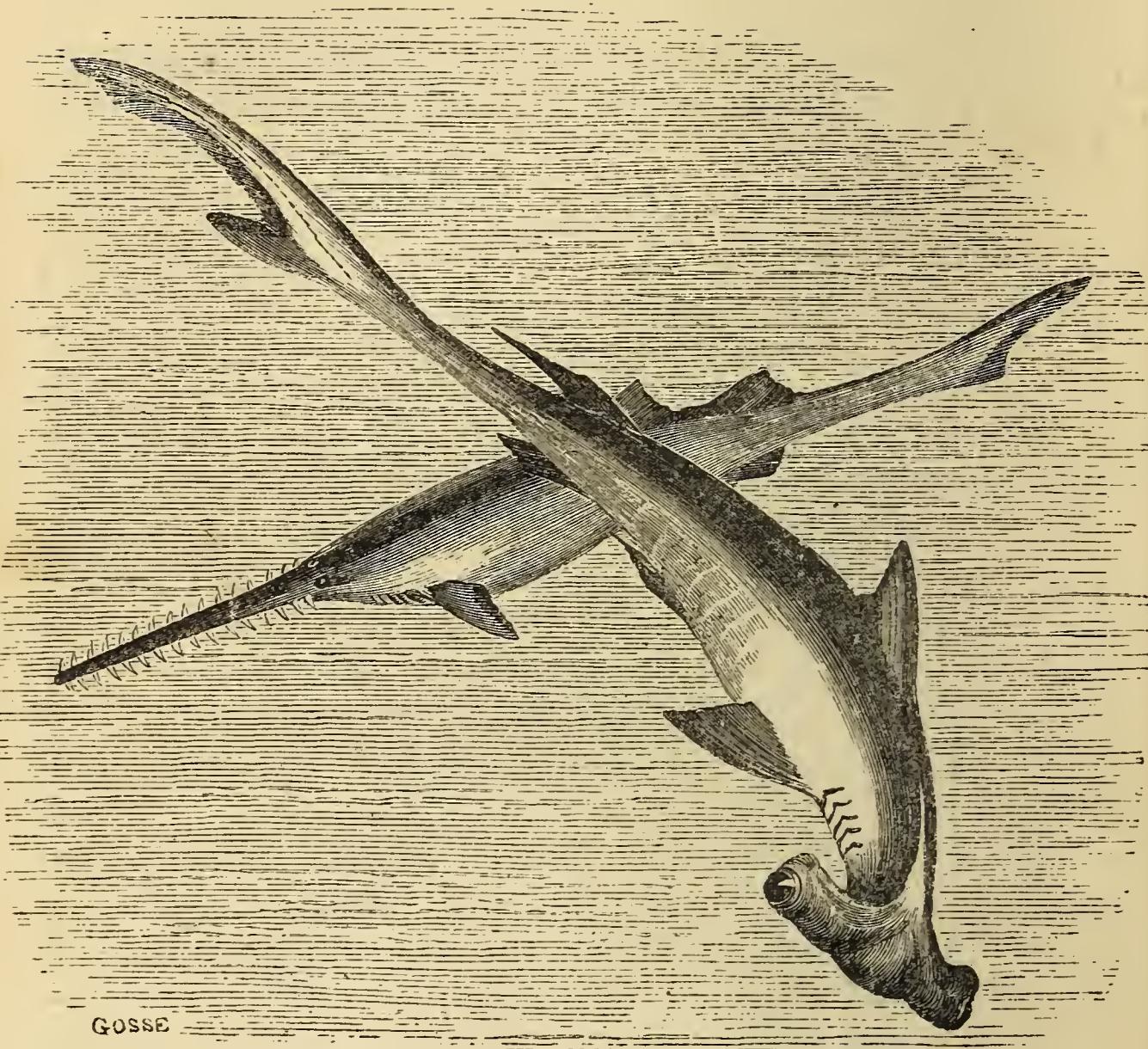
THE Saw Fish belongs to a family which is intermediate between the Sharks and Rays. In all of them the skin is covered with scales of a rounded or hexagonal form arranged like mosaic work ; they have large blow-holes situated at some distance behind the eyes ; and the mouth, which is on the under-side of the head, is furnished with a curious crushing apparatus by which the shells of crustaceous and other hard substances are broken up before they pass into the stomach.

The common Saw Fish is well known from its formidable snout, which is prolonged into a straight flat bony blade, bearing along the edges a number of pointed teeth directed outwards ; the teeth are imbedded in the bone, and are larger and closer together at the point of the sword than they are at the base ; and the number of the teeth is said to vary in different individuals. The use of this terrible beak is evidently for assault, and it is said that the Saw Fish, like the Sword Fish, does not hesitate to drive his weapon into

found to weigh six hundred-weight, and to measure 5 feet 10 inches in length, and 7 feet from the tip of the dorsal to the point of the anal fin. The fish has been preserved for exhibition. So large a specimen was never before seen in these seas.

the soft blubbery sides of the whale and other marine animals. It has also been seen to dash in among a shoal of fishes, and to kill or disable numbers of them by striking right and left with its sharp-toothed blade.

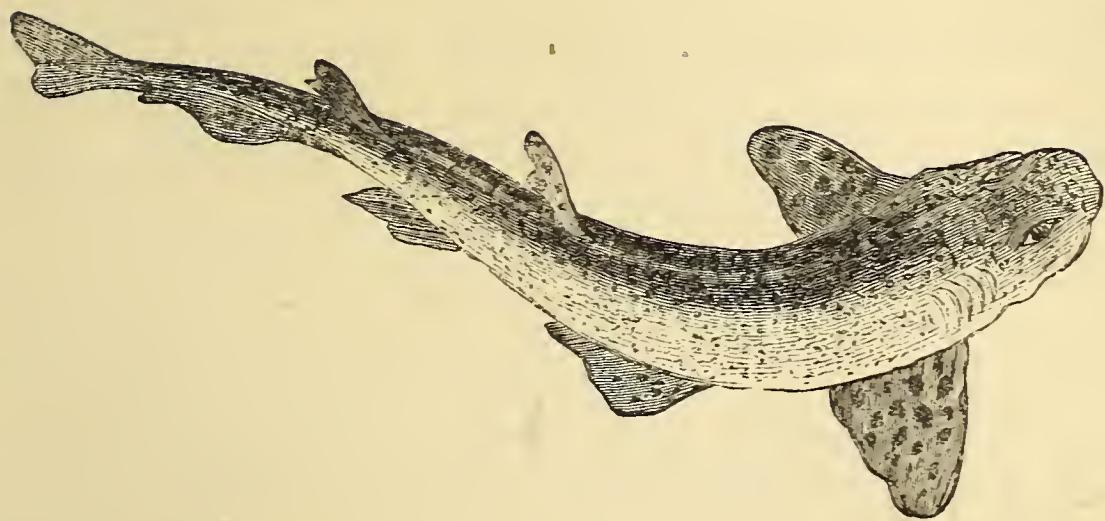
This destructive fish seems adapted to live in almost any climate, being found not only in the warm seas of



GOSSE

the Tropics, but in the cold regions round the Pole. It often grows to a great size, and has been met with measuring as much (including the saw) as eighteen feet. Its colour is a grey, almost deepening to black above, an ashy hue on the sides, and white on the under parts. In the engraving the Saw Fish is shown together with the hammer-headed shark.

SMALL SPOTTED DOG FISH.



THE Dog Fishes belong to the family of the Sharks, and do justice to their relationship by their voracity and boldness. The Small Spotted Dog Fish is the best known, being by far the most plentiful on our coasts. It is a sad pest to the fisherman, whose occupation it interferes with continually, and sometimes so mischievously as to defeat his endeavours. These active tyrants of the waters hunt in packs, following the shoals of migrating fish, and devouring them by thousands. They are said to confine the haddock and cod within certain limits near the shore, and to prey upon them at their will ; they have even been known to seize large cod-fish which have taken the baited hook, and to devour them in good part before they could be drawn to the surface. The Dog Fish is itself frequently caught both by net and line ; but it is of little or no value, its flesh not being esteemed, though its rough skin is sometimes used for polishing wood, and for other manufacturing purposes. The head of this fish is rather flat, and is pierced with a little blow-hole behind each eye ; its mouth is shaped like a horse-shoe. Its average length is about eighteen inches, and the colour of the body is a pale red, spotted rather closely with brown on the upper parts, and a yellowish white below.

Another species of Dog Fish, less common, but often found on rocky coasts, is the Rock, or Large Spotted Dog Fish, sometimes called the Bounce. This fish grows to a much larger size, frequently measuring a yard in length ; it is brownish grey above and white below, and is covered with broad patches or splashes of deep brown. Its habits closely resemble those of the species above described.

A third species of Dog Fish is the Black-mouthed Dog Fish. It grows to the length of two or three feet, and is distinguished from either of the above by its larger snout, and by a row of sharp prickles arranged like the teeth of a saw upon the tail-fin—an apparatus which has given it the name of the Saw-tail.

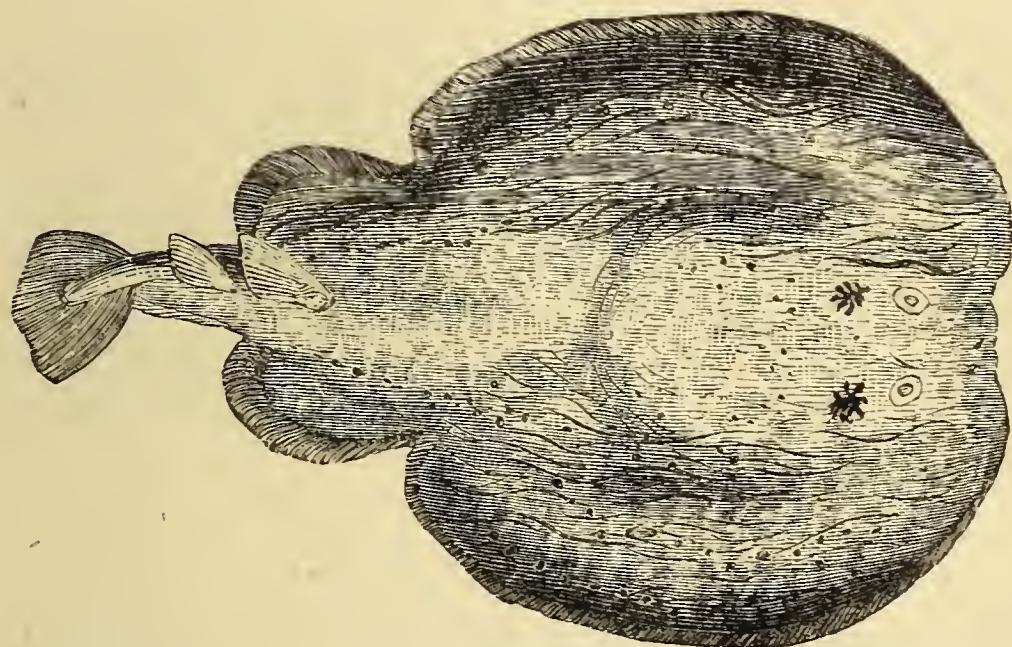
The egg of the Dog Fish must be familiar to all persons frequenting the sea-shore. Children call it the mermaid's purse ; it is a little oblong case, three or four inches in length, and having tendrils at each corner not unlike those of a vine, which tendrils are generally found fastened to the sea-weed cast up on shore after a gale. The young fish occupies this curiously-formed egg until it is strong enough to make its way out, which it does by pushing against one end of the envelope—that portion of it being so contrived as to open readily when pressure is exerted within, while no entrance can be possibly effected from without.

THE TORPEDO, OR ELECTRIC RAY.

THE Torpedo belongs to the family of the Rays, but is differently shaped from most other species of the family, its body being almost circular in form, while the tail is short and thick. It has long been celebrated for the strange power it possesses of giving forth, seemingly at will, sharp electric shocks. It is sluggish in its habits, and is fond of burying itself in the mud

or sand of the bottom, and in this situation it is said to emit its most forcible shocks, which are often sufficiently severe to prostrate a person who inadvertently treads upon the spot where it lies. Fishermen say that when the Torpedo is caught in a net they are made aware of its capture by the sudden shock they receive when hauling it in ; and if it is caught with a hook the angler experiences the same sensation.

The use which the fish makes of its electric power is not well known : it has been conjectured that it is a means of defence against other fishes which may assail it ; also that it may be the weapon with which the



Torpedo kills the prey upon which it feeds. On this subject Mr. Couch makes a valuable suggestion. He says :—“One well-known effect of the electric shock is to deprive animals killed by it of their organic irritability, and consequently to render them more readily disposed to pass into a state of decomposition, in which condition the digestive powers more speedily and effectually act upon them.” Now, as the organs of digestion are but imperfectly developed in the Torpedo, it is not unlikely that its electric power may be used to prepare its food for easy digestion.

In former times the shocks of the Torpedo were used as medical remedies in gout, in fevers, and in headaches, and special instructions were given as to the methods of applying them in each case. The fish does not always deliver a shock when touched, and will sometimes even suffer itself to be handled without showing any such sign of annoyance. The apparatus by which the shocks are given is placed between the pectorals and the head and gills ; it consists of a number of cells exactly resembling those of a honeycomb, and containing a transparent jelly-like fluid.

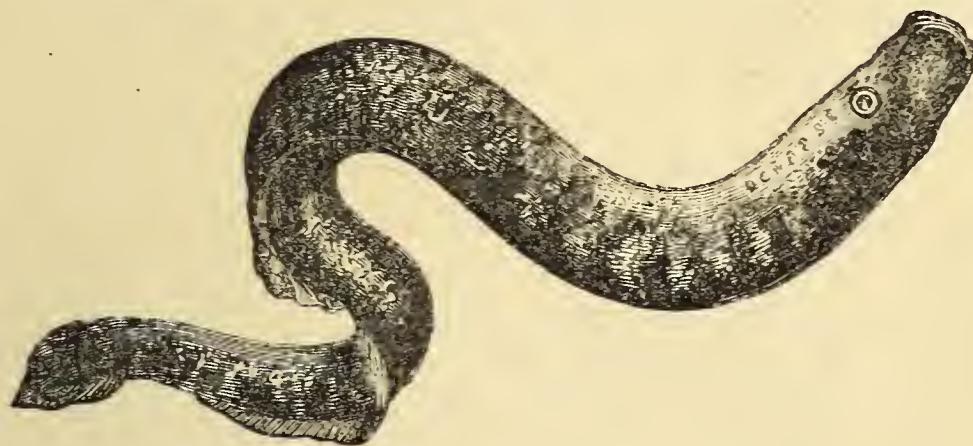
The Torpedo is found in the Indian and Pacific Oceans, and off the Cape of Good Hope, and occasionally it has been taken on our own coasts. With us it is often called the Cramp Fish, or the Numb Fish, from the unpleasant effect it produces on the nerves of those who touch it.

The Torpedo never attains to any very great size, the largest specimens being about four feet in length, and less than four-score pounds in weight.

THE LAMPREY.

THE Lamprey is a snake-like fish, resembling the eel in form, having a mouth which is aptly compared to that of the leech, and an apparatus for respiration, of a singular kind, and consisting of seven small orifices on each side of the neck. It is an inhabitant of the sea, where it passes most of its time, but ascends the rivers for the purpose of spawning. When full grown it measures about three feet in length, and its flesh is excellent, though it is now not much eaten, owing to an unreasonable prejudice against it. Lampreys ascend the English rivers about the latter end of April and the beginning of May, and during the summer months numbers of them are taken both in the Severn and the

Thames. In depositing their spawn, they do not, like most of our fresh-water fish, plough a furrow in the bottom to receive it—they have not that prolongation of the lower jaw which would enable them to do so; but by means of their sucker-like mouth they remove stones from the bottom, and lay their spawn in the hollows thus made. “Their power is immense: stones of a very large size are transported, and a large furrow is soon formed. They remain in pairs, two on each spawning-place, and while there employed, retain themselves affixed by the mouth to a large stone.” The food of the Lamprey consists of soft animal substances, such as worms and larvæ, but they are also known to



attack larger fishes, by fastening on their flesh, and while affixed eating away the soft parts down to the bone. The colour of the Lamprey is olive brown with spots of darker brown and deep olive green, and the edges of the fins are reddish.

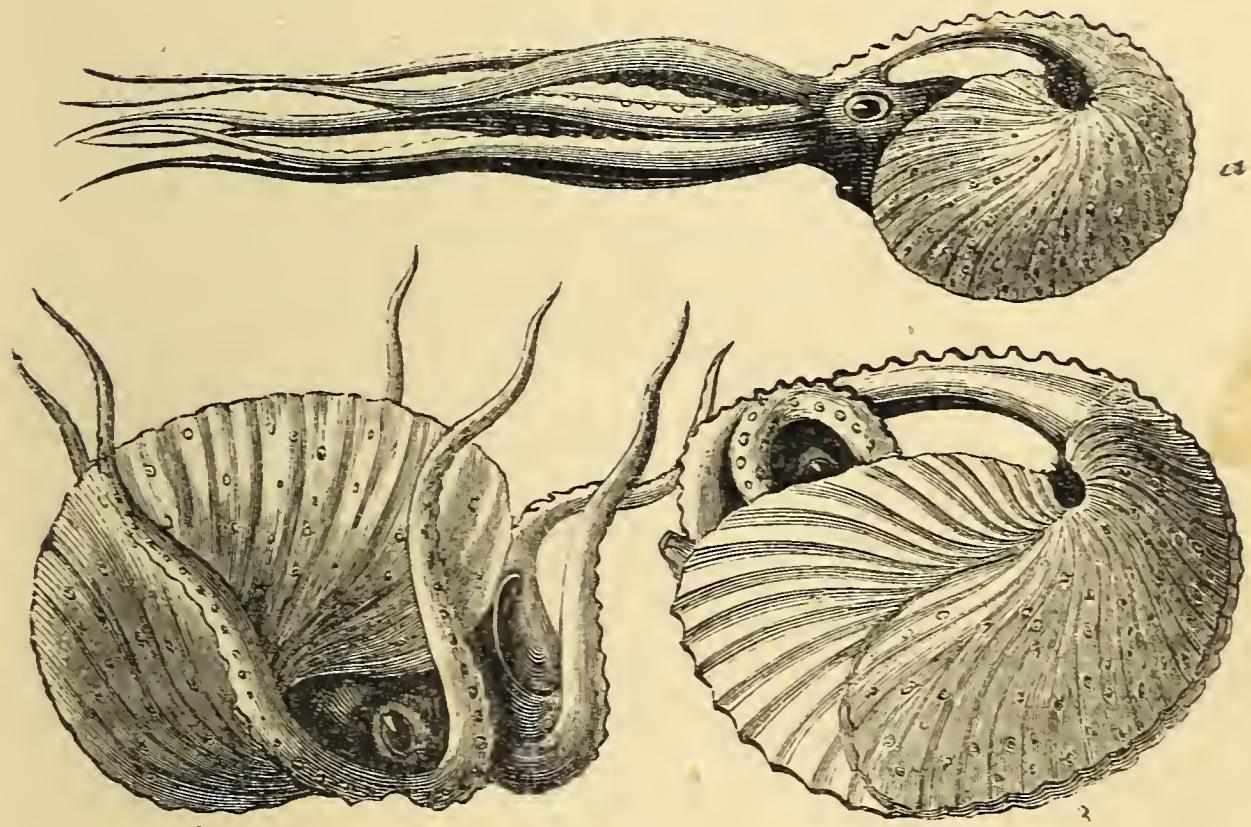
The fish above described is the true Lamprey, and is sometimes called the Sea Lamprey, to distinguish it from the River Lamprey, or Lampern. This last-named fish is much smaller than the former, and is common in many of our rivers and brooks; but though its flesh is a real delicacy, it is subject to the same prejudice as the Sea Lamprey, and is rarely eaten. Still large numbers of them are caught, as they are of value to use as baits for other fish. At one time more than a million of

them were taken annually from the Thames alone, and sold to the Dutch cod-fishers, who kept them alive in tanks until wanted for use. The Lampern makes provision for the deposition of its spawn much in the same way as the Lamprey does, usually carrying on the business in pairs ; but sometimes as many as two or three score of the Lamperns are seen to make common cause in forming their cradle, and to deposit their spawn in one hollow, which all have combined to excavate, and which is large enough to accommodate them all.

The colour of the Lampern is a slate-blue on the upper parts, and white on the lower. It rarely exceeds a foot in length.

MOLLUSCS.

THE PAPER NAUTILUS.



THE Argonaut, or Paper Nautilus, so called from the thinness of its shell, is found in the Mediterranean, and is common on the coasts of Italy, Sicily, and Northern Africa. It is a mollusc of the Cephalopod class, inhabiting a roomy and elegant shell, resembling in a considerable degree the form of a boat, but extremely fragile, delicate, and furrowed on the surface. The animal is furnished with a pair of broad fleshy arms, which it can expand as sails, and with four slender ones, which it is said to use for rowing. It is

often seen afloat when the sea is calm ; and it was assumed by ancient writers who watched it many centuries ago, that man first learned the art of navigation by observing its movements.

As there is no muscular connexion between the animal and the shell it inhabits, it was for a long time supposed that the shell originally belonged to some other proprietor, and that the Argonaut had seized it for its own use. Observation, however, has proved the error of that supposition, and shown that the Argonaut is its own ship-builder—and has proved, moreover, that it is capable of making the needful repairs to its frail vessel whenever repairs are demanded. Madame Power, who kept many in confinement, broke the shells of a number of them, and had the satisfaction of seeing them repaired by the occupiers ; and she came to the conclusion that the shell is in the first instance formed by a secretion from the membrane of the sails ; the wrinkles of which cause the ribs of the shell. During the life of the animal the shell is not hard or brittle, as it is in our museums, but is so flexible as to admit of its two sides being squeezed together without injury.

If the Argonaut, when floating, is alarmed by the approach of any one, it folds its sails over the shell, draws in its rowing-arms, and sinks beneath the surface. If alarmed beneath the surface, it ejects an inky fluid, which beclouds the water around it, and gives it time to hide in the mud of the bottom.

Mr. Rang found, on watching the movements of an Argonaut in confinement, that when moving along on the bottom it does so in a reverse position to that which it maintains when swimming—crawling on its head, with its ventral parts uppermost.

SNAILS AND SLUGS.



A. *Helix aspersa*. C. *Arion ater*. E. *Limnaeus stagnalis*.
B. *Testacella haliotoidea*. D. *Limax cinereus*. F. *Paludina vivipera*.
G. *Planorbis corneus*.

THE above all belong to the class Gasteropoda, a term given to animals whose foot is the under surface of their body. The Land Snails are exceedingly numerous, and various kinds of them are found in all countries. The different genera and species inhabiting Britain amount to nearly sixty; they are of various sizes, some being as large as a walnut, and others smaller than a pea. Many of the smaller species abound in some parts of the country in amazing numbers, and are sometimes seen covering acres of ground and clustered upon every plant and blade of grass, as though they had fallen in

a shower from the clouds. The best known of our Land Snails is the common Garden Snail ; it has four soft horns, which it can stretch out and draw in at pleasure ; its eyes are placed on the tips of its two longest horns, and it can stretch them far enough out to see around in all directions. It is found wherever there is vegetation, but it is fondest of the garden, where it feeds on the ripe fruits and tender plants.

Pond Snails are found in numbers in low, swampy districts, and in sluggish rivers and streams, but are in greatest abundance in stagnant ponds, where they feed on the aquatic plants, to the stems of which they are often found attached. There are many species, some exceedingly small, and others rivalling the Garden Snail in size. They have the power of floating on the water, with the foot uppermost, from one place to another, but seem to be unable to choose their direction, and are carried away by the slightest current or breath of wind. Some of the species respire air, and have to come frequently to the surface to breathe. Other species breathe only water ; but these have the same habit of floating about foot uppermost on the surface of the pond.

Slugs are a constant plague to the gardener, and are better known for the mischief they do than for anything that can be said in their favour. We may look upon them as snails devoid of shells ; and though they are of no direct use to man, they are certainly a welcome luxury to ducks and water-fowl, who devour them greedily. They delight in moist and shady places, such as the close, well-watered rows of garden-plants, the under sides of felled timber, and the overhanging banks of running streams ; and the largest are often found in damp underground cellars. Both by night and day they make sad havoc in the garden, unless care is taken to keep them in check. For this purpose the gardener employs coal-ashes, soot, quick-lime, sawdust, anything that will injure or annoy them. As lime-water will

kill them, that is much used for watering the roots of the plants where they lie hid. To prevent their climbing a tree, nothing is better than a few coils of horse-hair line around the trunk ; the bristles of the line prick their foot, and prevent their passage over it.

Slugs are a numerous family, comprising many genera and species ; they are found in all climates, but are most abundant in northern and temperate countries.

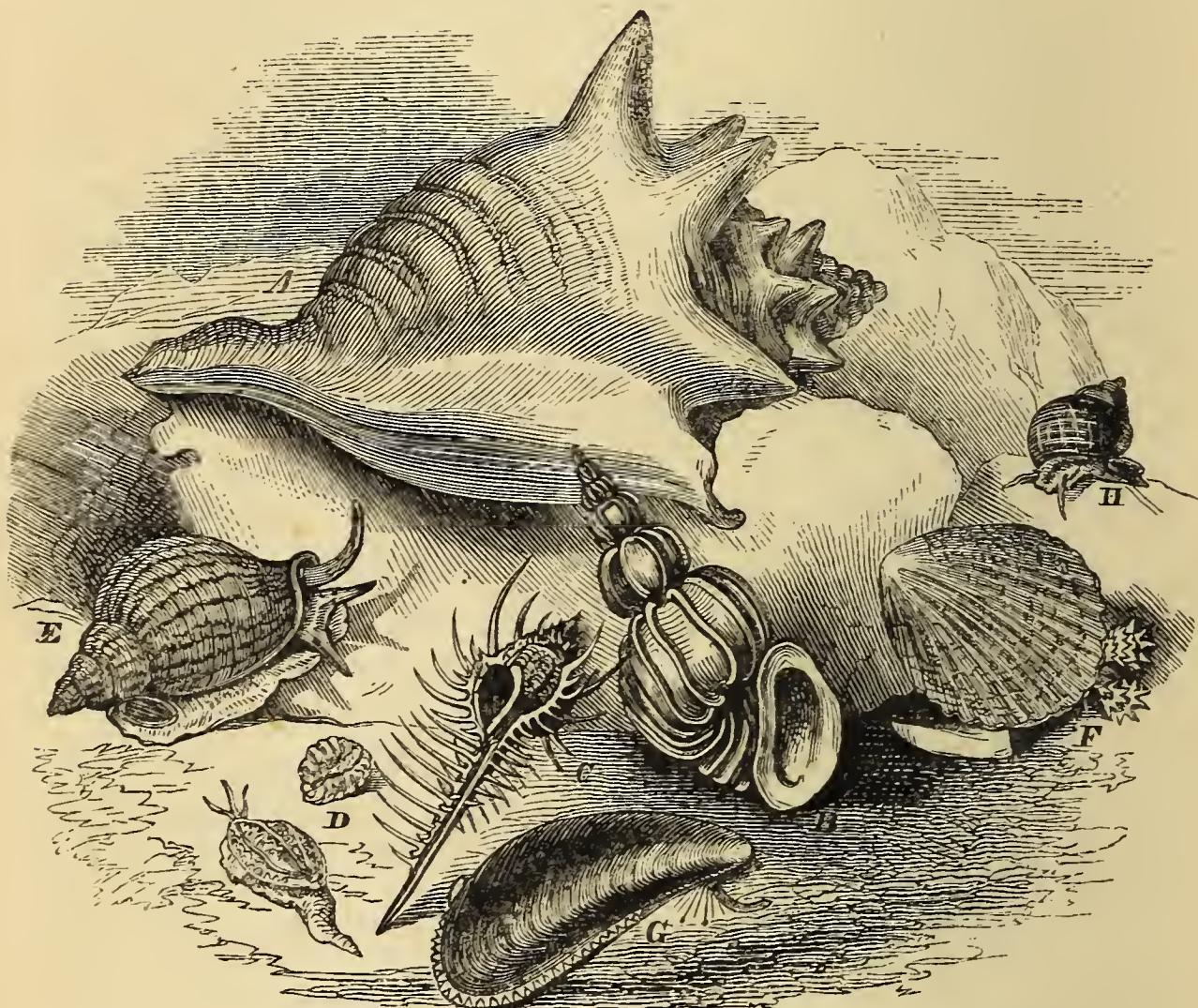
SEA SHELL-FISH.

THE sea abounds in Shell-fish in almost endless variety. Some are of enormous size, while others are so minute as to escape observation. Many of them are exceedingly beautiful both as to form and colour, being at once graceful in outline and decked with the most exquisite hues. One of the most prized is the Wentletrap, found in the Chinese seas, which was once so much valued, that from twenty to thirty pounds were given for a single specimen. Many of the genus *Cassis*, or Helmet-shells, are much esteemed ; so are the larger Conches, well known for the delicate rosy tints of their interiors ; and few are more curious than those of the genus *Murex*, of which the Thorny Woodcock is a favourite specimen. Among the Cowries, some of which are used as money in various parts of the world, none is better known in England than the Tiger Cowry with which we adorn our mantel-pieces.

There are other races of Shell-fish, however, which, though we can scarcely call them beautiful, are of more use to mankind than anything can be which is merely ornamental. In their outward appearance they have little to recommend them, but they supply us with wholesome and appetizing food. Besides the Oyster, of which we consume many millions yearly (and which is described in another place), we eat the Whelk, the

Cockle, the Mussel, and the Periwinkle ; and in each of these there is a regular commerce in the London markets.

The Whelk is one of the commonest of all shells thrown up by the tide on our shores, and may be picked up almost anywhere on the coast. It varies from five inches or more to less than one inch in length, and the middle or smaller sizes are reckoned the best. The use



A. Conch. C. Thorny Woodcock. E. Whelk. G. Mussel.
B. Wentletrap. D. Cowries. F. Cockle. H. Periwinkle.

of the Whelk as an article of food is rather ancient, for we read of eight thousand of them being served up at table at the installation of Archbishop Warham, of Canterbury, in 1504. In London the Whelk is a favourite diet with the working poor, for whose use it

is sold by the street stall-keepers, and is eaten with vinegar and pepper.

The Cockle is equally well known, and, being more digestible food, is more highly esteemed. It is of small size, rarely exceeding an inch in length, but it is found in immense numbers on many parts of the southern coast and in the Welsh channel. It abounds most on sandy shores, near the mouths of rivers, and it can bury itself in the sand to a considerable depth.

The Mussel is found on rocky coasts, adhering in vast numbers to the rocks and stones of the bottom. They are caught with little trouble, and are usually sold very cheap ; but doubts are entertained as to their wholesomeness, for, though many people eat them without any ill consequence, others find that they entirely disagree with them, and they have been known to produce blotches, swellings, and other symptoms of derangement.

The Periwinkle is abundant, not only on our own shores, but in all seas and all climates. Tons of them are brought to Billingsgate Market almost daily ; and though they are the smallest shell-fish that are sold, they yet constitute an important article of commerce. They are eaten boiled, and are picked out of their shells with a pin, from which circumstance they have derived the name of "pin-patches," which they bear in some parts of the country. Their flavour is delicate and relishing.

CRUSTACEA.

THE CALLING CRAB AND THE TREE LOBSTER.



THE Calling Crab has derived its name from its rather ridiculous habit of flourishing its great claw in the air, as though it were calling or beckoning to some

one in the distance. It belongs to the tribe of swift-runners, and inhabits the near margin of the sea, where it burrows in the ground, making a hole of some depth for a residence. Its eyes are club-shaped ; its antennæ are slender ; and its claws are unequal in size—sometimes the left, and sometimes the right one, being not merely larger than the other claw, but larger than that and the whole body of the crab to boot. These crabs can run so fast that a man can hardly overtake them : when pursued to their holes, they cover the entrance with their big claw, and are not easily captured. They are ravenous feeders, and will cluster round carrion, disputing for possession of it with the vultures. They are found in warm climates in both hemispheres, and are said to remain in their burrows during the winter, covering up the entrance so as to conceal it from view.

The Tree Lobster, or Purse Crab, is a native of Amboyna and other neighbouring islands. It remains concealed by day, and comes forth by night to seek its food : its home is sometimes in the fissures of rocks by the sea-shore, sometimes in burrows at the roots of trees. They were found by Mr. Cuming in Lord Hood's Island in the Pacific, where he sometimes met them in the road : on being approached they assumed a threatening attitude, but retreated, making a snapping noise with their pincers. According to the natives of the island, they climb the cocoa-nut trees to feed on the nuts ; and Mr. Cuming states that they climb a species of palm for the sake of feeding on a small nut that grows upon it—and he adds that he himself saw them in the tree.

These climbing crustacea grow to a large size, and are said to be excellent eating when properly dressed ; they are a favourite article of diet among the inhabitants of countries where they are found.

THE HERMIT (OR SOLDIER) CRAB.



THESE curious Crabs, which are called Hermits from their solitary habits, and Soldiers from their combative ness, are very common upon all our coasts. They have no shelly covering on their tails, and in order to protect the tender extremity, they make use of the shell of some mollusc, which they select of an appropriate size, changing it for a larger shell as they increase in growth. The young ones begin by inhabiting the shells of the little tops and periwinkles, and those which have reached their full size take possession of the deserted shells of the whelk, which they find sufficient for their accommodation. It is not easy to withdraw one of these crabs from the shell it has chosen to inhabit; it holds on tightly by its tail pincers, and will generally suffer itself to be torn in pieces rather than loosen its hold.

When in search of a new dwelling, the crab will put up with an unsuitable one until he can find a better—always preferring, however, one that is too big to one that is too small: when he has a large variety to choose from he is very fastidious, and takes a long time to make up his mind ; he may be seen trying on one shell after another, by inserting his tail, and dragging the shells about—but, having at length settled his choice, he plumps into his new dwelling with a velocity that almost baffles the sight.

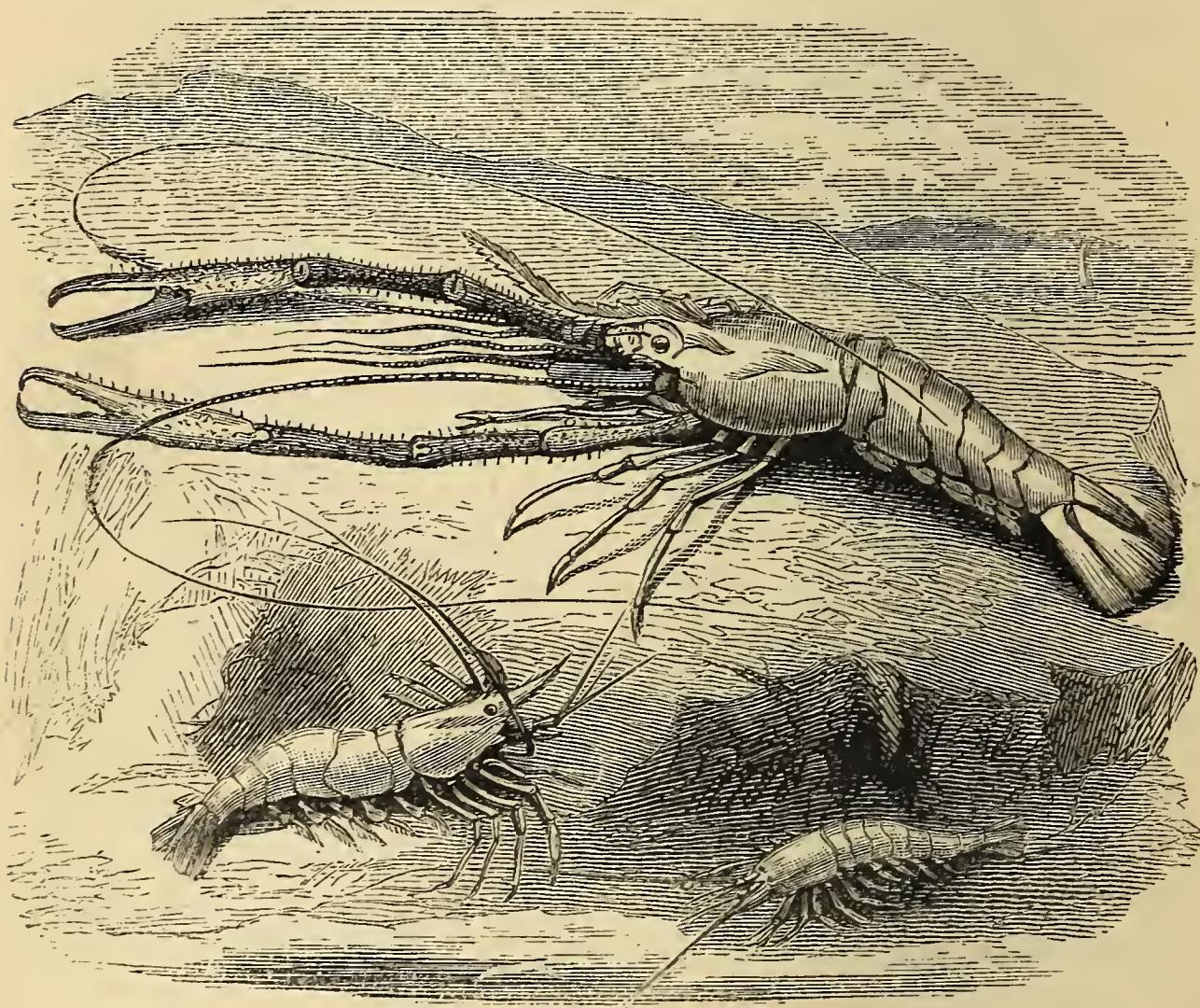
As a combatant he is recklessly courageous. If two houseless Crabs find themselves in a pool where there is but one suitable shell, they will fight for it till one of them has killed the other, and the conqueror will be sure to eat up his unfortunate antagonist. They also fight fiercely with their houses on their backs, and a very trifling provocation will suffice to bring on a combat: they make use of their large claw as a weapon, each trying to crush the breast of his foe ; the first that succeeds in this, drags his victim out of his shell, and sets about eating him immediately.

These Crabs are often kept in aquariums, where, in order to prevent them from killing each other, it is advisable to choose them all of the same size, and to feed them well and regularly. Some of them may be seen at any time in the glass tanks in the fish-house in the Zoological Gardens, where it is interesting to watch their movements.

THE SHRIMP AND THE PRAWN.

THE Common Shrimp is one of the family of crustaceans belonging to the division having ten feet and a long tail. It is too well known to every one to require a minute description, being sold in large quantities throughout the summer months in nearly every town in the kingdom. Immense shoals of Shrimps frequent the coasts, and numbers of men, women, and lads find

employment in catching them and preparing them for the markets. They are caught with the greatest ease on the flat, shallow, and sandy shores of the south coast, where the boy shrimper marches out till he is nearly up to his middle in water, and pushing before him a large open net fastened to the end of a pole, thus skims the bottom, and lifting the net from time to time, deposits the Shrimps it contains in a bag hanging at



his girdle. The Shrimps are, of a dull grey colour when alive, but become pink or a reddish brown when boiled. A close observer of nature records a singular fact with regard to these little creatures. One day, when the weather was remarkably clear and the sea calm, he noticed a flickering kind of mist low down upon the surface of the water, which caused it to appear as if seen through a veil, and for which he could not account. On closely investigating the matter, however, he dis-

covered that this misty appearance was occasioned by countless myriads of young Shrimps, who were enjoying their gambols during the fine weather, and incessantly leaping out of the water to the height of two or three feet.

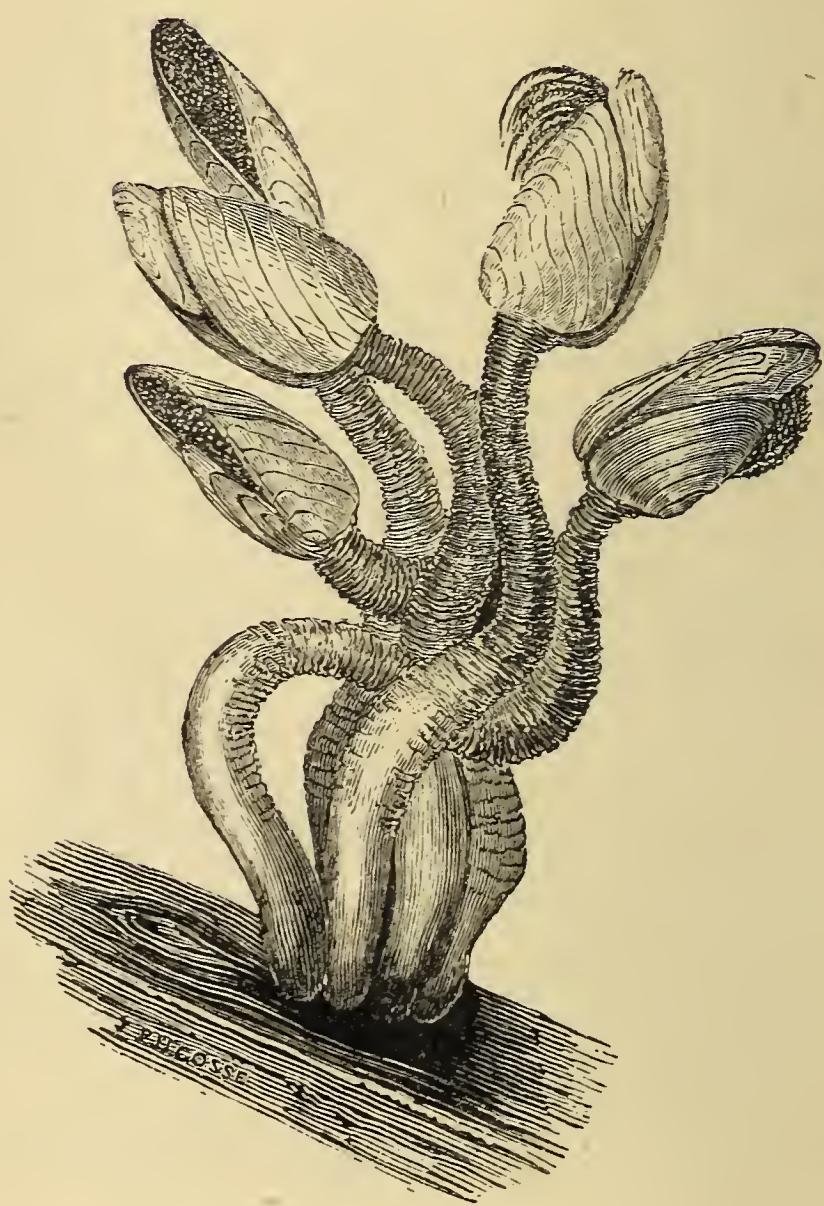
Several varieties of the Shrimp are caught on the English coast.

The Prawn belongs to the same division of the crustacean family as the shrimp, but it is a very different creature, and is more than twice the size. The Prawn has a crest protruding above the eyes, and two pairs of antennæ (one pair being double), each much longer than its body. It is when alive of a greyish colour, marked with small red and brown spots. Like the shrimp, it is exceedingly well known, being a favourite though rather expensive article of diet. Prawns are found on the coasts both of France and England, and they are frequently taken in the nets of the shrimpers, though seldom in any large numbers. They are commonly sold in the London markets, and form a part of the stock of a fishmonger throughout the season. In very warm climates Prawns are found of a great size: thus, in the Indian seas and in the Ganges, there is a species (*Palemon carcinus*) which is almost a foot in length, and in the Antilles another species attains to the length of ten or twelve inches.

THE COMMON BARNACLE.

THE Barnacle was once ignorantly supposed to give birth to a species of goose known as the Barnacle Goose, and a memorial of this preposterous notion is retained in its scientific name, *anatifa*, which may be translated "duck-producing." The Barnacle is enclosed in a shell formed of five several pieces, but bearing some resemblance to that of the mussel. From

the broad end of the shell projects the footstalk, a leathery cylindrical-shaped membrane, firm to the touch, yet considerably flexible and elastic. This footstalk varies in length, probably according to the age of the Barnacles ; we have seen them not more than four or five inches long, and again, in immense multitudinous



clusters, as long as twenty inches to two feet. At their juncture with the shell the footstalks are of a dark sea-weedy hue, almost black, but the colour changes towards the other extremity into a rosy flesh tint, fading nearly into white at the point of attachment. The valves of the shell are open only in front, and the arms, or *cirri*, of the creature, twenty-four in

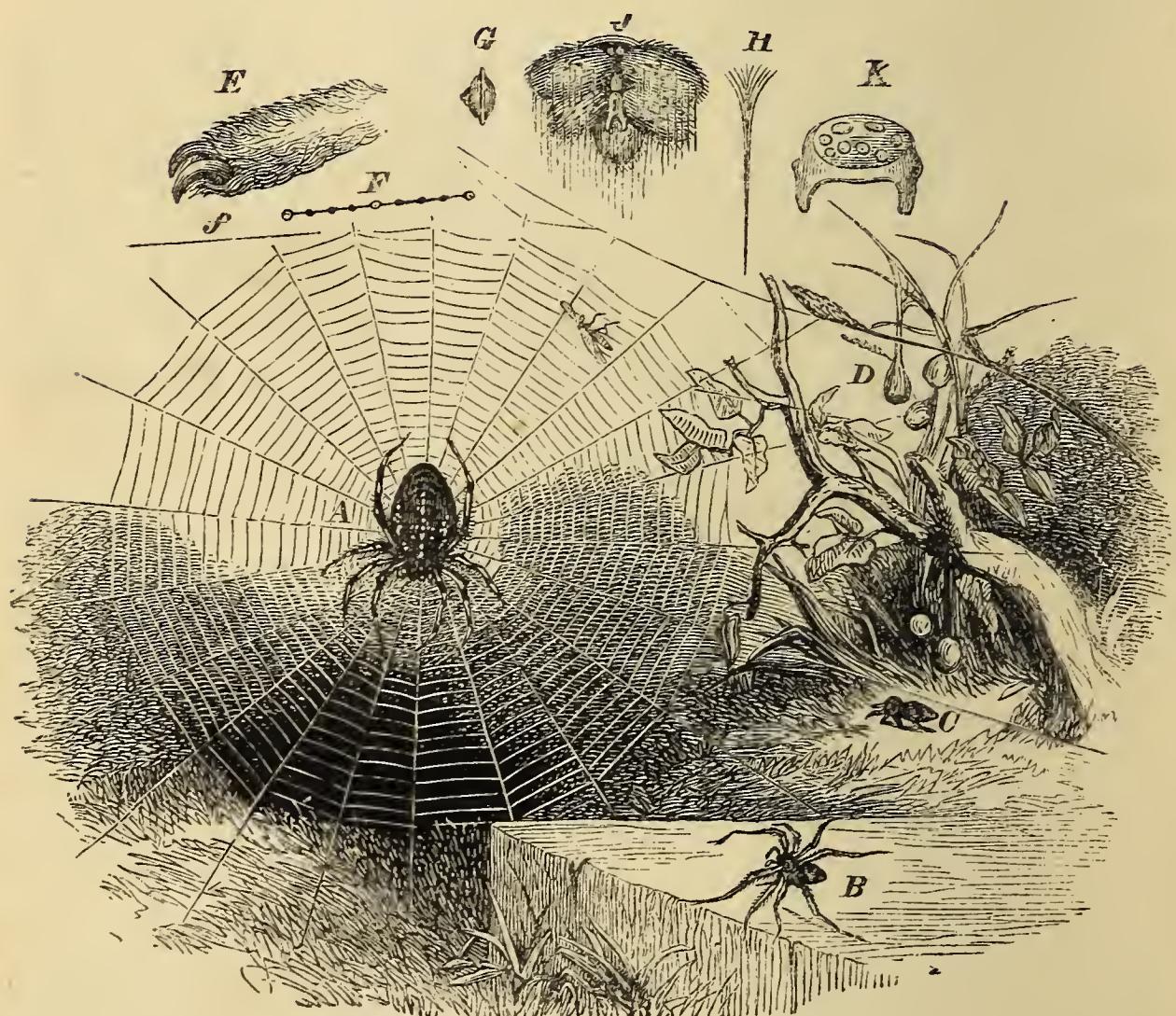
number, are continually being thrust through this opening in order to catch the small animalculæ floating in the sea. When examined under water, this action of the arms is seen to go on without a moment's cessation, and it is even continued mechanically for hours after the animals have been taken from the water.

When first produced the Barnacle is quite free, and swims about like other inhabitants of the sea ; but as it grows up it undergoes a wonderful transformation ; it loses its organ of vision and the limbs which enabled it to swim about, and fixing itself to some rock or hard floating substance, remains a fixture to the end of its life.

Barnacles are a sad plague to navigators, from their attaching themselves to the bottoms of vessels, and thus impeding their progress through the water. Instances have been known of voyages being so protracted by their means, that the provisions on board ship have become exhausted, and the crews were reduced to feed upon the Barnacles scraped from her bottom.

INSECTS.

SPIDERS.



THE Spiders are a very numerous family, differing much in their habits as well as in their form and size. Some are very large, and it is stated that in tropical countries they are large enough to prey on small birds;

while others are so minute as to be all but invisible to the naked eye. Most of them, however, resemble each other in one respect, for they spin webs which they use to entrap their prey. The web is spun from a cluster of nipples, called spinnerets (Fig. J), placed under the abdomen, each nipple being pierced with countless small holes, through which the fluid forming the web is forced at the Spider's will. The Spider has further the power of closing any of the holes, and can thus increase or diminish at pleasure the number of strands forming the rope or web (Fig. H). It is said that the stoutest webs are composed of upwards of three thousand strands. The feet of the Spider are furnished with a kind of comb attached to the hooked claws (Fig. E), by means of which it can easily arrange the threads of its web. Different Spiders construct different kinds of snares. That of the House Spider (Fig. B), which is built in corners and near windows, is close in texture, almost like a thin cloth, and costs a great deal of labour ; but that of the large Garden or Geometric Spider (Fig. A) is only a net with wide meshes, and is sometimes made complete in the course of an hour. Some webs are very thin, and spread along the surfaces of old walls ; others are woven over the grass or on the ground ; and the web of the Gossamer Spider is so fine that it floats in the air a long time.

If you try the net of a Garden Spider by touching it with a straw, you will see that it is made of two kinds of web : the ropes which run in straight lines from the centre in all directions (*see f*), are thick stiff cables compared with the others : they are not elastic—you cannot stretch them—and they are not sticky, and will not adhere to the straw ; but the web which forms the cross-bars of the net, and which runs round in a spiral, beginning near the centre, is so very elastic that you may stretch it to twenty times its original length before it will break, and it is so sticky (Fig. F) that you cannot get the straw away without breaking it. It is

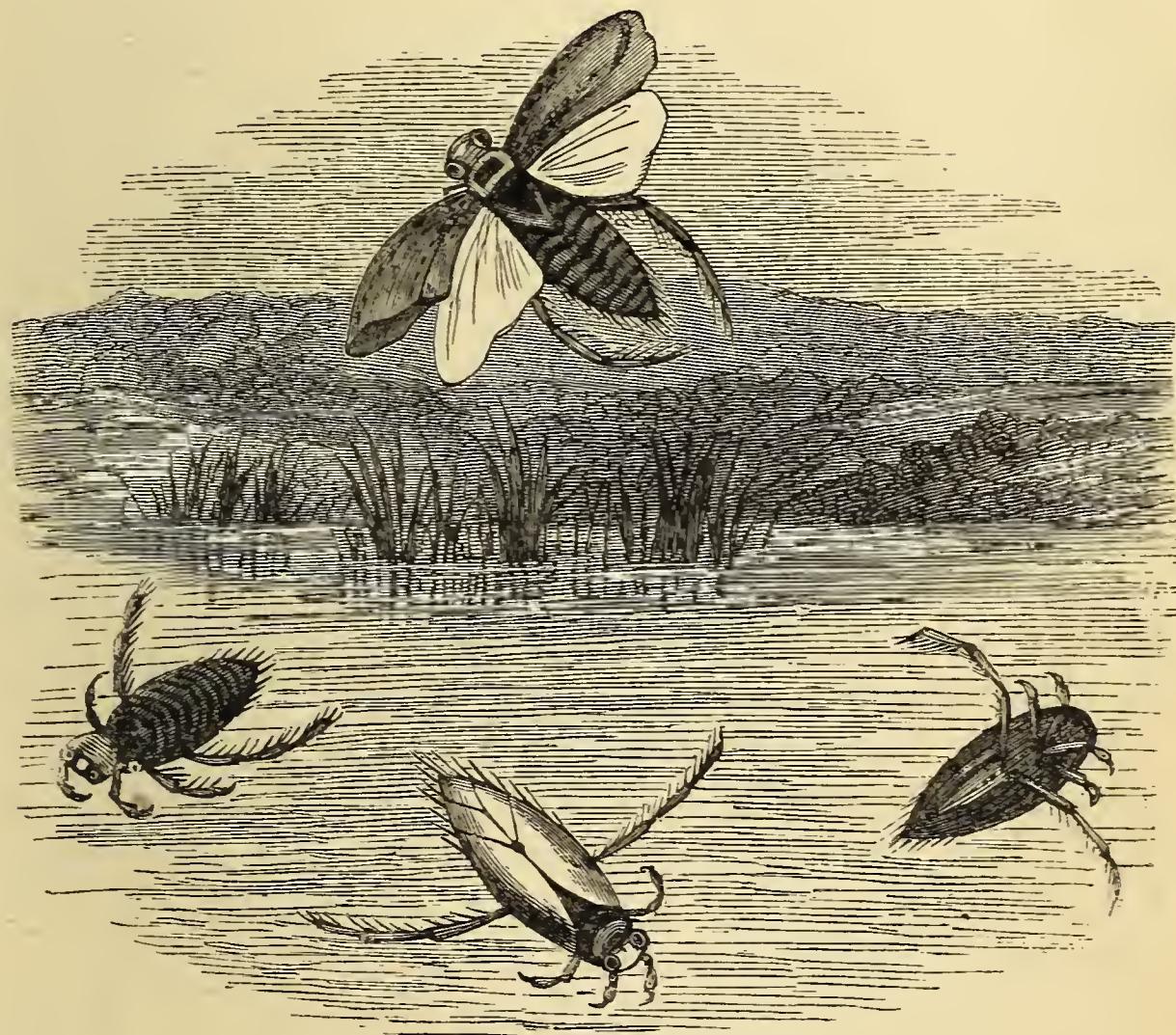
this springy and sticky web that holds fast the flies which happen to touch it. When a fly is caught the Spider runs out from its hiding-place, and soon sucks away its life-blood ; but if the prey is large, and struggles much, he first binds it down with his web before he begins to feed.

All Spiders do not make nets and snares for their prey. Some of them hunt flies and other insects, and roam from place to place in search of them ; but even these make use of their webs in catching them. If you watch the Hunting Spider (Fig. c), in summer, when flies are plentiful, you may see that when a small fly comes within six inches of him he and the fly suddenly disappear together ; the Hunter's motions are so quick that you do not see what has happened ; but if you pass your finger under the spot on which the Hunter was standing, you will most likely bring up his web with both fly and Spider dangling at the end of it, the former struggling in the grasp of the latter ; for the Hunter, before he leaped on his prey, fastened his web firmly to the spot he stood on in order to save himself from tumbling headlong to the ground ; and he has no sooner caught his victim than he begins to climb the rope to the place from whence he started. It is curious to note that the Hunter is clever enough to measure his distance ; when he leaps from a high spot he will allow himself a long rope, but if he starts from near the ground the rope is short—so that he never injures himself by the leap.

The female Garden Spider is much larger than the male. About July she lays hundreds of small eggs, and spins a kind of round covered cradle (Fig. d) for them ; and the young ones may be seen in gardens during August, looking like small clusters of golden stars in a thin filmy cloud, adhering to some projecting part of the wall or fence. The old ones are busiest in their work of slaughter during the autumnal months, when our gardens are generally full of them, but at the first

severe frost they all disappear. The arrangement of the eyes, and a side view of one, are shown in Figs. K, G.

THE WATER-BOATMAN.



THE Water-Boatman inhabits ponds and small field pools, where it lives partly on vegetable juices, and partly on the numerous tiny creatures which are constantly falling into the water and perishing there. The body of the Water-Boatman is in shape like a boat, or an Indian canoe, and its structure is said to be in

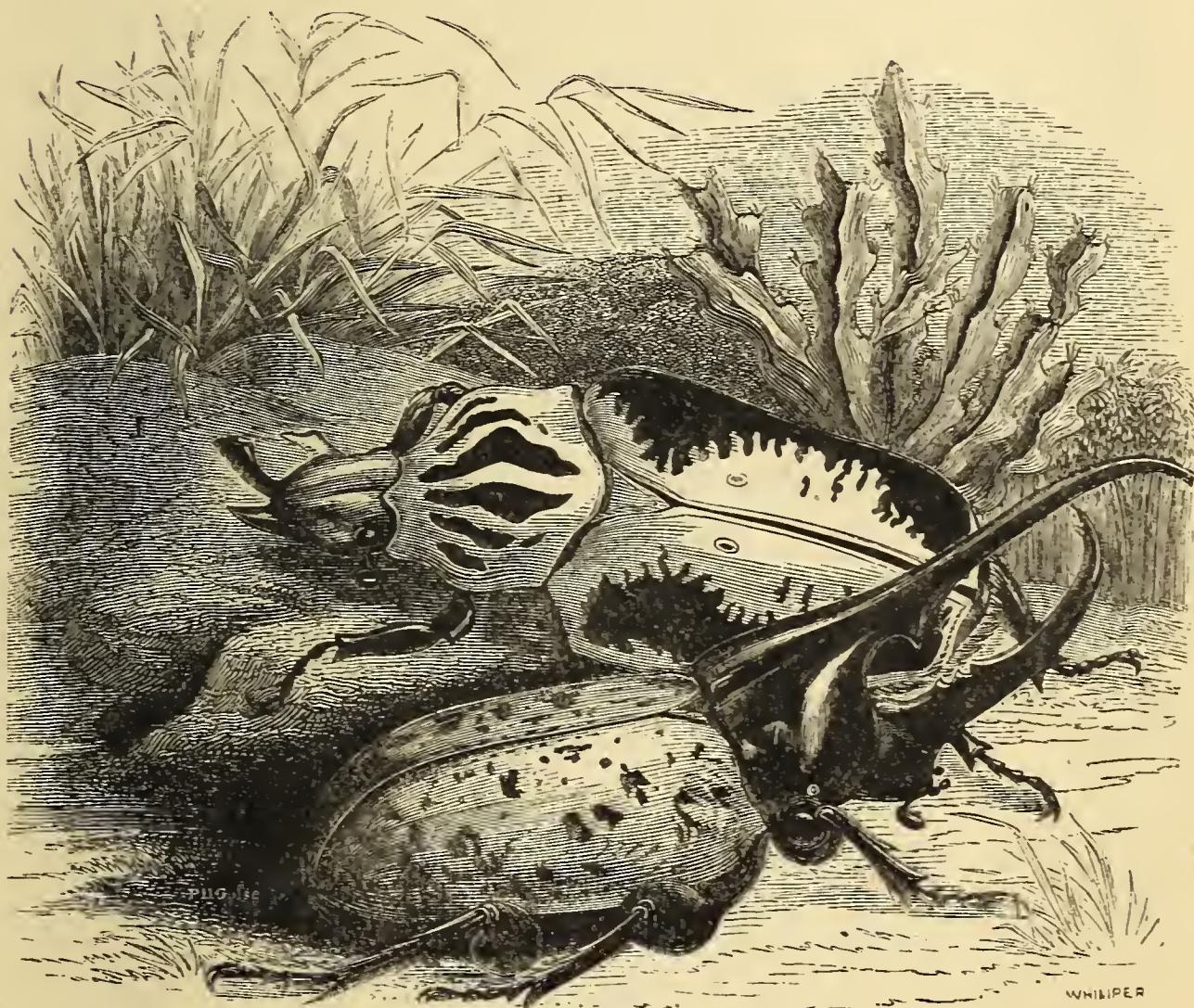
accordance with the most scientific principles of boat-building—the contour of the body, the curved keel-like back, and the position of the head, all tending to facilitate its movements on the water. It swims upon its back, and makes use of its hinder legs as a pair of oars, for which they are wonderfully well adapted, their extremities being bordered by a firm fringe of stiff hairs, which act as oar-blades by their impact upon a considerable expanse of the water. It also swims equally well beneath the surface.

In summer weather these insects may be seen lying on their backs on the top of the water, quite motionless, as if enjoying the warmth of the sun, and having their long paddles extended ready for action: when thus at rest they are probably on the watch for any minute creature that may drop within view, and which may afford them a meal; if disturbed, a single stroke of their paddles propels them to a place of safety, or plunges them beneath the surface. As these insects breathe atmospheric air, they must visit the surface occasionally to obtain it; any one who chooses may watch them in a pond, as they rise gently, thrust their tails out of the water for a fresh supply of air, and then descend again.

The construction of the eyes of the *Notonectæ*, or back-swimmers, is remarkable—these organs being divided into two parts; one set appears to be adapted for seeing beneath the water, and the other for the thinner medium of the air.

By night the Water-Boatman flies abroad: it has handsome and powerful wings, and is capable of a long-sustained flight.

THE HERCULES BEETLE, THE GOLIATH BEETLE, ETC.



THE Beetles figured in the engraving are among the largest of the beetle races. The males of these larger species are armed with horny projections from the head and thorax, having the appearance of formidable fangs or weapons of offence. Among them are the largest beetles known—the giants of the insect race. The Goliath Beetle, so called on account of its great size, is noted for the metallic splendour of its green wing-covers, which resembles, though on a much larger scale, the glittering hues of the handsome Rose-beetle.

of our gardens. The Hercules Beetle measures nearly six inches in length, and is very broad and stout. Of the same family with the Hercules is the Polyphemus Beetle, noted for its size, strength, and portliness, and the grotesque horny projections of its head. These giant beetles mostly inhabit tropical countries, very few species being found in Europe. The Stag Beetle, however, which is of an allied family, is not uncommon in England.

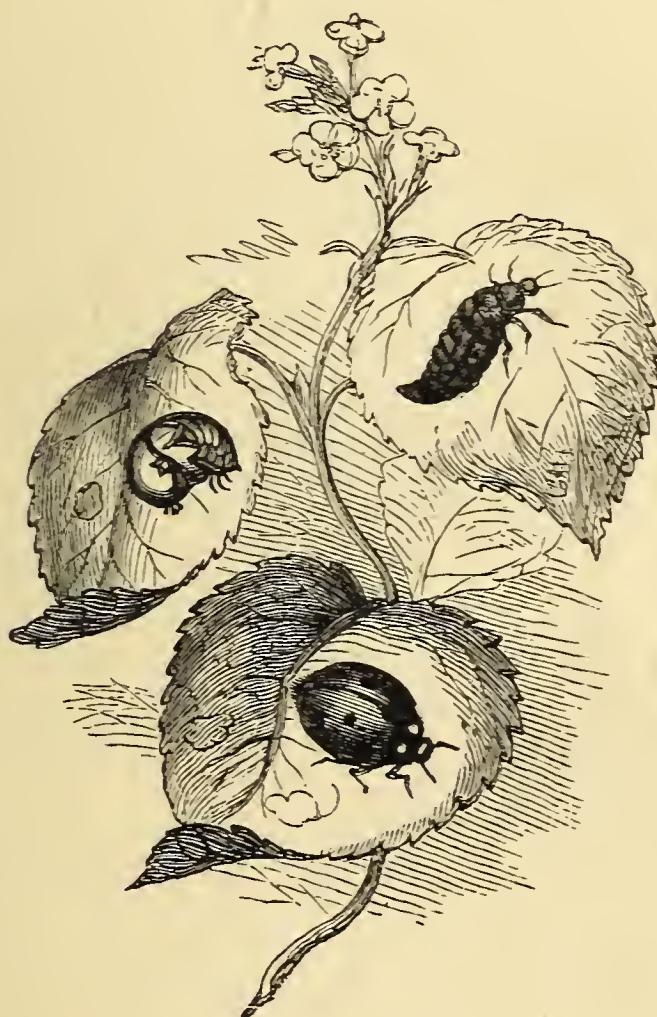
The larvæ of these huge Beetles live under the soil, where they are found in the form of large white, or whitish, grubs, perfectly helpless, and feeding upon the roots of vegetables ; and even when they have attained their perfect form they are not the aggressive creatures which their portentous armature would seem to imply. Their food is entirely vegetable, and they are supposed to make use of their stout weapons in tapping the bark of trees in order to get at the vegetable juices. They fly by night, often to a great height, and hide themselves by day in holes in the earth, or in hollow trees.

THE LADY-BIRD.

THE Lady-bird is a small and beautiful coleopterous insect, well known and admired for its brilliant colouring, which consists of a bright vermillion ground marked with a few spots of black. It is a great favourite with children, and there are some simple rhyming legends connected with it, expressive of sympathy for its imagined misfortunes, and which young children are fond of repeating.

The Lady-bird, as long as it is in the larval state, passes its time in waging unrelenting war upon the

Aphides which infest our flowers, plants, and fruit-trees. These it devours by the million, and in a manner exterminates them in the course of the late summer and early autumn. In its capacity of destroyer of such blighting pests, the Lady-bird is the best friend of the gardener, the farmer, and the hop-grower. In the Kentish hop-gardens we sometimes see the plants eaten almost bare by the destructive Aphides, which swarm



upon every leaf, reducing them to mere skeletons ; but when all appears doomed to destruction, the little grubs of the Lady-birds make their appearance, and attacking the destroyers in their turn, slaughter and devour them in such multitudes, that in a short time the plants, freed from their ravages, recover their greenness and strength, and expanding their buds, ripen into a glorious crop.

The Lady-birds deposit their eggs in incalculable numbers on the very spots where the Aphides deposit theirs ; so that when their young are hatched, which does not take place until comparatively late in the season, they find themselves surrounded by their favourite food.

In the autumn the Lady-birds are often seen in immense swarms, covering the ground and everything upon it for the space of whole acres. From these swarms appearing frequently on the sea-coast, it has been supposed that they assemble there to emigrate ; and as they have been known to alight on ships at sea, the supposition is not without apparent grounds. It is doubtful, however, if they have the power to direct their flight. We have ourselves seen them driven in clouds before the wind, and carried out to sea, evidently quite unable to choose their own course, inasmuch as they clung in crowds upon any object that came in their way, and strewed the shore with their bodies. The advent of these swarms on the Kentish and Sussex coasts has often been the cause of needless alarm to superstitious persons, who imagined them to be the harbingers of some dreadful calamity.

THE MOLE-CRICKET.

THE Mole-cricket is so called from its habit of burrowing in the earth, like the Mole,—for which purpose it is furnished with fore-limbs of great comparative size and strength. It is rather larger than the House-cricket, and has large and handsome wings. Its food is supposed to be generally vegetable, but it will eat animal food, and accepts raw meat when offered ; it is very pugnacious, fighting readily with its own species, and eating its adversary when it has subdued him.

The best account of these curious insects has been given by White of Selborne, who describes them as follows :—“The Mole-cricket haunts moist meadows, and frequents the sides of ponds and banks of streams, performing all its functions in a swampy, wet soil. With a pair of fore-feet curiously adapted to the purpose, it burrows and works underground like the mole, raising a ridge as it proceeds, but seldom throwing up hillocks.



“As Mole-crickets often infest gardens by the sides of canals, they are unwelcome guests to the gardener, raising up ridges in their subterranean progress, and rendering the walks unsightly. If they take to the kitchen quarters, they occasion great damage among the plants and roots by destroying whole beds of cabbages, young legumes, and flowers. When dug out they seem very slow and helpless, and make no use of their wings by day ; but at night they come abroad and make

long excursions, as I have been convinced by finding stragglers in a morning in improbable places. In fine weather, about the middle of April, and just at the close of the day, they begin to solace themselves with a low, dull, jarring note, continued for a long time without interruption, and not unlike the chattering of the fern-owl, or goat-sucker, but more inward.

“About the beginning of May they lay their eggs, as I was once an eye-witness ; for a gardener, at a house where I was on a visit, happening to be mowing, on the 6th of that month, by the side of a canal, his scythe struck too deep, pared off a large piece of turf, and laid open to view a curious scene of domestic economy” (it was the nest of the Mole-cricket):—“There were many caverns and winding passages leading to a kind of chamber, neatly smoothed and rounded, and about the size of a moderate snuff-box. Within the secret nursery were deposited near an hundred eggs, of a dirty yellow colour, and enveloped in a tough skin ; but too lately excluded to contain any rudiments of young, being full of viscous substance. The eggs lay but shallow, and within the influence of the sun, just under a little heap of fresh moved mould, like that which is raised by ants.

“When Mole-crickets fly, they move *cursu undoso* (in a wavy course), rising and falling in curves. In different parts of the kingdom people call them fen-crickets, churr-worms, and eve-churrs, all very apposite names.”

The Mole-cricket is of a brown colour, the tints being darker in some parts than in others : the wing-covers and the thorax are covered with a short velvety down.

GNATS AND MAY-FLIES.



THE life of a Gnat presents a most curious and interesting history. The parent of a swarm lays her eggs on the surface of the water, and, to prevent them from sinking, she glues them together in the form of a little boat (Fig. *c*). The eggs are pointed at one end and flat at the other, the flat end being furnished with a little lid, which lid is always turned downwards towards the water, in order that the larvæ on leaving the egg may find themselves in their proper element. The larvæ (Fig. *d*) have no legs, but in the place of them have numerous small tufts of hair at the different segments of their bodies. They are most active in the water, and seem almost always wriggling about, probably catching their food, which is supposed to be minute

animalcules, or vegetable matter: they are generally seen at the top of the water, hanging with their heads downwards; and the reason of this is, that so long as they continue in the larva state, they breathe through their tails, which they keep above water for that purpose. After changing their skin several times, the larvæ pass into the pupa state. In this condition they take quite a new form, having the head curled under the body, the tail sunk low in the water, and the back protruding out of it, because they now breathe from two tubes rising out of the back, which tubes must of course terminate in the air. When the pupa is about to assume the winged condition it stretches itself out flat on the surface of the water, and, inflating its body, splits the skin just between the breathing tubes (Fig. *e*), lifts its head from the opening, and, carefully extricating its wings, flies away (Fig. *b*). This operation does not take more than a minute; but when the weather is rough, it is often fatal to the Gnat, which is sure to perish if its wings get wet; and in windy weather they do perish in such numbers that large ponds may often be seen covered with their bodies. Gnats are astonishingly prolific; the female lays about three hundred eggs at a time, and there are many generations of them in the course of a year. Though nearly the smallest of all our winged insects, they are found abroad late in the season, and are often seen swarming and sporting in December.

The May-fly (Fig. *a*) passes from two to three years in the water, though it rarely lives more than a single day in its perfect or winged state. The larva is hatched from an egg, and in form is not unlike the perfect insect, but it has no wings. It has six legs, and runs about at the bottom of the water, or lurks under stones or in holes in the bank, feeding, it is supposed, on decayed vegetable matter. The pupa resembles the larva in form, the chief difference being that it has the rudi-

ments of wings on the hinder parts of the breast. When the time for its last change has arrived, the pupa crawls out of the water, and casts off one covering; by the loss of which its wings are set free, so that it can fly, though not without some difficulty. Alighting on the first convenient support, it proceeds to get clear of the thin pellicle which yet envelopes its body, a task which it accomplishes in a few minutes, and then flies off to enjoy its short life in the sunshine. A few hours of existence are now all that remains for it; and in this brief time it has to find a mate, and to lay its eggs. Its eggs are very numerous, and it would not live long enough to lay them all one at a time, as the Gnat and many other insects do; therefore it drops them all in a mass into the water, and almost immediately dies. It is from the short period of its winged life that the May-fly derives its name of *Ephemera*, which signifies "living for a day." May-flies are well known to anglers as the best of all baits for trout during the months of May and June: over a thousand of them have been found in the stomach of a trout of a pound weight.

THE APHIDES, OR PLANT-LICE.

At certain seasons in the year—sometimes in the spring, and at other times when the summer is at its height—we see in our gardens the twigs and shoots of rose-bushes and other flowers covered with small greenish flies, some with wings and some without. If we look further, and at the right time, we shall find that insects of a like kind, though different in shape and size, swarm in the same way upon our fruit trees, where

they do a great deal of mischief, not only destroying the young crops, but permanently injuring the trees. Nor is it the flowers and fruit trees only that are thus infested—it is doubtful whether there is any plant that grows which is at all times entirely free from these pests, though they show a marked preference for such as bear fruit, or such as are characterised by their fragrance: thus the hawthorn is often attacked by them just as its blossoms are opening, and so is the lime-tree, in which they will swarm in legions count-



less as the sands of the sea-shore. We have seen an avenue of limes half a mile long, whose every leaf was clammy with the sweet matter which exudes from the bodies of these diminutive creatures.

Gardeners and farmers call these insects "blight," and many persons suppose that they are brought hither by blighting winds; but that is a mistake, their immense numbers being solely due to their extraordinary powers of multiplication. The first Aphides appearing in any tree or plant are produced from eggs

which were laid in the previous autumn, and have remained on the plant all the winter: these egg-born insects, however, throughout the summer, lay no eggs themselves, but produce their young alive, bringing forth brood after brood with such rapidity as to defy calculation. After producing some ten broods alive in the course of the summer—each brood at the age of a few days becoming producers in their turn—the *Aphis* finally deposits eggs for the supply of the following year. It has been estimated that a single *Aphis* may be the progenitor, in a single summer, of five thousand millions of offspring, or about five times the number of all the human beings on the face of the globe. Vast as are their numbers, however, they are kept down by their countless enemies, to whom, having no means of defence, they fall an easy prey.

It was long known that some relationship existed between the Ants and the Aphides, and many erroneous notions were formerly entertained on the subject. The true relationship was explained by Linnæus. He discovered by close observation that the Ant ascends the trees, *that it may milk its cows, the Aphides*. According to Kirby and Spence, the Aphides, when no Ants attend them, waste their sweet fluid: “by a certain jerk of the body, which takes place at regular intervals, they ejaculate it to a distance; but when the Ants are at hand, watching the moment when the Aphides emit their fluid, they seize and suck it down immediately. This, however, is the least of their talents; for they absolutely possess the art of making them yield it at their pleasure, or, in other words, of milking them. On this occasion their antennæ are their fingers; with these they pat the abdomen of the *Aphis* on each side alternately, moving them very briskly; a little drop of fluid immediately appears, which the Ant takes into its mouth. . . . When it has thus milked one, it proceeds to another, and so on.”

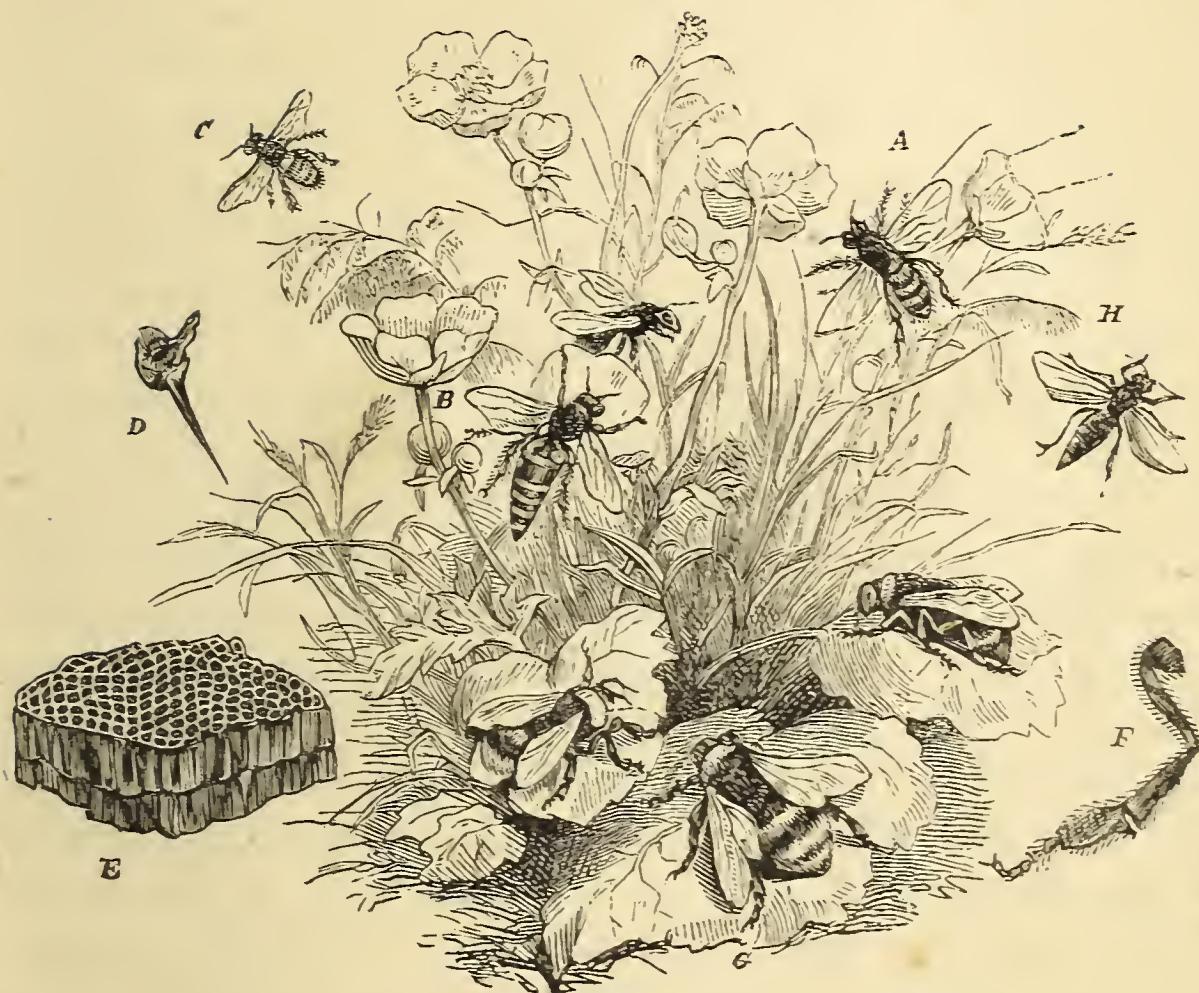
But the most singular part of the history is—“that

Ants make a *property* of these cows, for the possession of which they contend with great earnestness, and use every means to keep them to themselves. Sometimes they seem to claim a right to the Aphides that inhabit the branches of a tree or the stalks of a plant ; and if stranger ants attempt to share their treasure with them, they endeavour to drive them away, and may be seen running about in a great bustle, and exhibiting every symptom of inquietude and anger. Sometimes, to rescue them from their rivals, they take their Aphides in their mouth ; they generally keep guard round them, and when the branch is conveniently situated, they have recourse to an expedient still more effectual to keep off interlopers—they inclose it in a tube of earth or other materials, and thus confine them in a kind of paddock near the nest, and often communicating with it."

Almost every species of plant yields support to a different kind of *Aphis*, and more than three hundred species of *Aphis* have been recognised and described by naturalists. The effects of the attacks of these minute insects is often of great importance : they sometimes reduce the apple-crops of Herefordshire and Devon so completely as to prohibit the manufacture of cider ; and in some disastrous years they have practically annihilated the crop of hops.

The best means of destroying the Aphides is tobacco-smoke, and where plants infested by them can be brought together under cover this remedy is easily applied.

BEES AND WASPS.



A. Male Bee. B. Queen Bee. C. Worker Bee. D. Sting of Bee.
 E. Portion of Honeycomb of Bee. F. Leg of Bee. G. Humble Bees.
 H. Wasp.

THERE are several kinds of honey-making Bees. Some of them lead almost a solitary life, living only in pairs ; they lay their eggs in holes in the ground, and, shutting them up together with some provisions for the grubs, leave them to their fate. Others make warm nests for their young, lining them with soft wool ; and others again will lay their eggs in old empty snail-shells, or in crevices in the rough bark of trees. But the Bees we know most about are the Hive Bees, who give us their honey, and who live and work together in very large numbers. In every hive there are three distinct kinds of Bees, all members of the same family ; these are, the Queen, the Workers, and the

Drones. The Queen is the mother of the whole family, which sometimes numbers as many as thirty or forty thousand, and she is always laying eggs and increasing the number. The Workers gather honey in the fields and gardens by sucking it from the flowers with their long tongues ; and they also gather the pollen of the flowers, of which they make bee-bread to be stored up for the food of the larvæ. The Workers also build the honeycombs, which they make of wax obtained from their own bodies ; and in addition to this they take care of all the young grubs as fast as they are hatched, and feed and tend them carefully until they are able to fly. The Drones do no work, but live at the expense of the Workers ; but they pay for their laziness with their lives—for before the summer is over the Workers attack them in a body, and kill them without mercy, dragging their dead bodies out of the hives. This slaughter lasts for three or four days, till not one of them is left alive. Early in the summer, generally about the end of May or the beginning of June, the Bees become so crowded in their hive, that they cannot live comfortably ; multitudes of them therefore leave the old hive, and swarm off together to find a new home. People who keep Bees know when this swarming is going to take place, and are careful to provide a new hive for the reception of the swarm. A very cruel practice prevails in this country of destroying the Bees for the sake of obtaining their honey. But there is no necessity for this, as the honey may be easily taken without killing the Bees ; the method of doing it is very simple, and, we are happy to say, is becoming more generally practised every year.

Wasps, although we consider them as plagues, and kill them when they invade our dwellings, are as interesting and as industrious in some respects as the Bees. There are many sorts of Wasps ; some, like the solitary Bees, live in pairs, and build their nests in hollows and crevices, whilst others hang their nests on

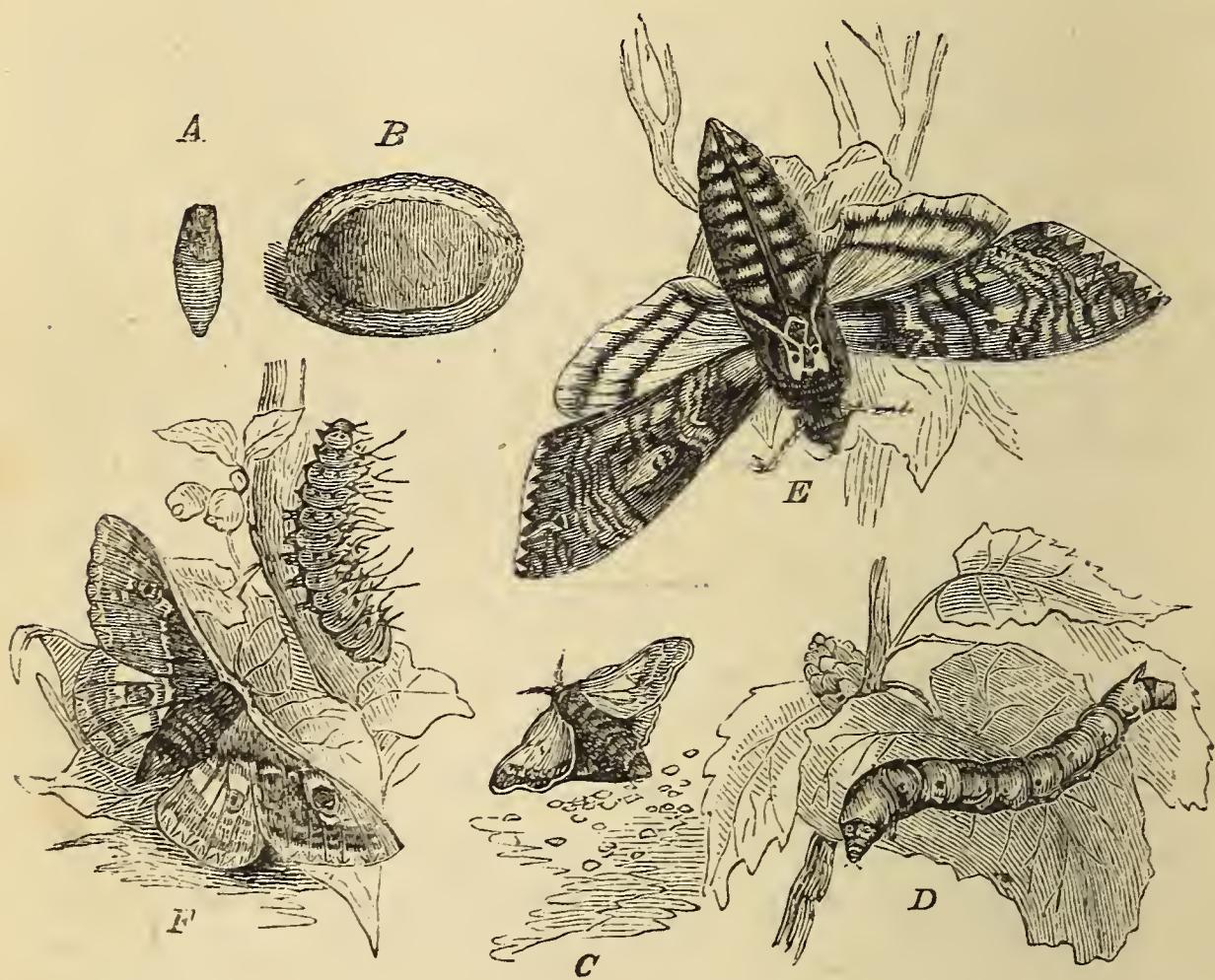
the branches of trees. The social Wasps, however, like the Hive Bees, live in large families, sometimes amounting to tens of thousands, of all of which a single female is the parent. At first she works alone ; she digs the hole in the ground for the nest, and herself makes all the cells in which her eggs are to be laid ; she makes them, not of wax, but of woody fibres scraped from soft timber with her jaws ; and she feeds the grubs as long as they require it. When at length they have become perfect Wasps, they also begin building cells, laying eggs in them, and rearing their young ; and this goes on so fast, that before the end of the summer there will be forty thousand Wasps in the nest. All this multitude, however, make no provision for the winter, and the consequence is that nearly all of them die when the cold weather comes, the young ones being slaughtered by the old ones. The hard frosts of mid-winter kill nearly all of them off, only a few of the strongest surviving to continue the race.

MOTHS.

THE various species of Moths are exceedingly numerous : they much resemble butterflies in shape, but they differ from them in the form of the antennæ, and few of them erect their wings when at rest, as the butterflies do. They rarely fly about in the day-time, but are active at night. The Hawk-moths seem to prefer the gloom of twilight, and are visible in the greatest number soon after sunset. One of the most remarkable of this division is the Death's-head Moth (Fig. E), which is of a grey colour, varied with rich brown and yellow, and is marked with dark spots on the fore part of the back, bearing some resemblance to a human skull. When caught it sometimes utters a feeble noise, like the cry of a mouse ; and for these

reasons ignorant and superstitious people have regarded it with dread.

Moths vary greatly in size : there is one large species found in China, called the *Atlas Moth*, which is said to measure nearly a foot across the wings ; while some species, the caterpillars of which feed upon the inner substance of leaves, are not more than the twentieth of an inch in length, and not so thick as a pin. One of the most beautiful of the British Moths is the



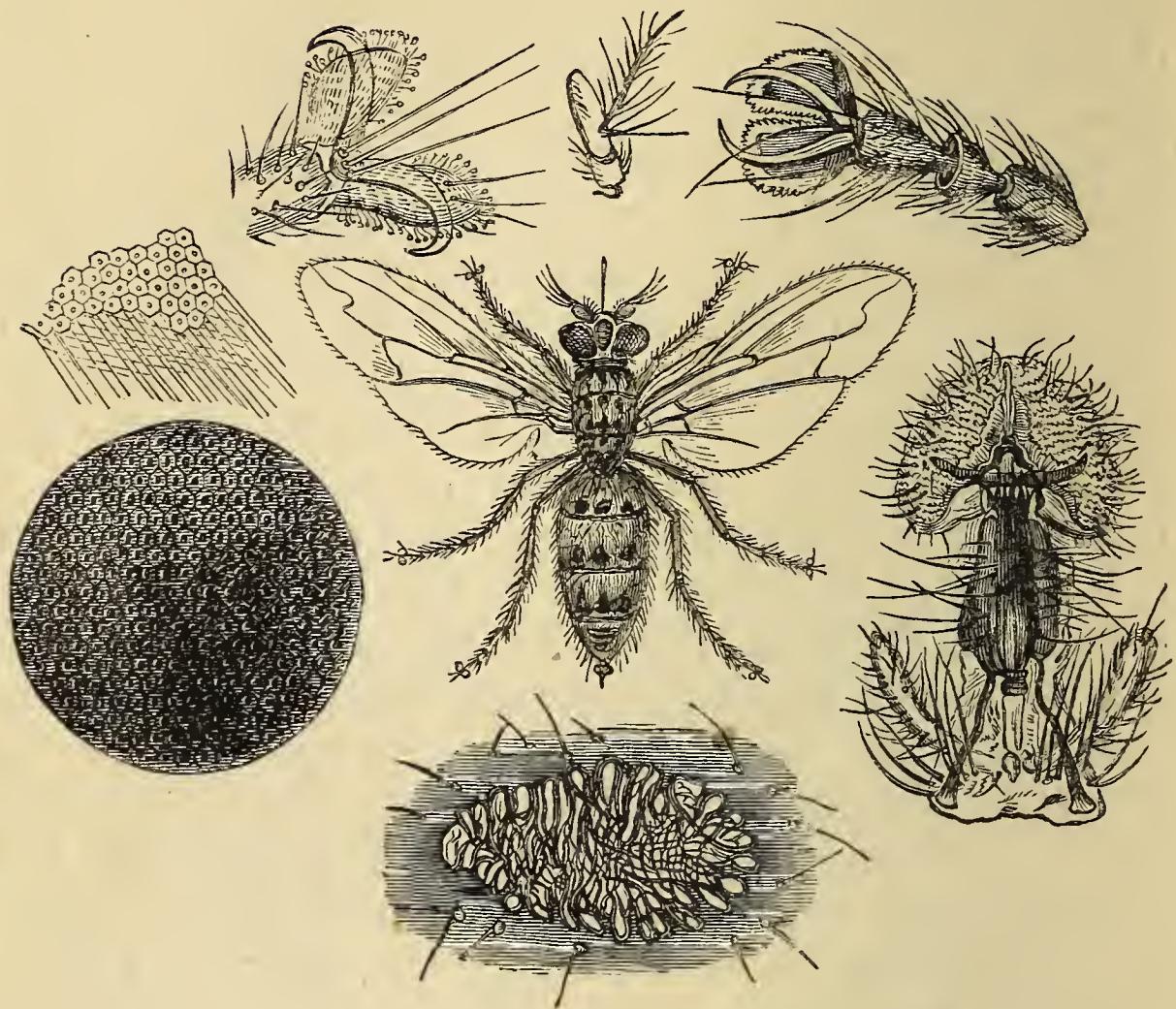
Emperor (Fig. F), which is about three inches in width, and whose colours are grey, purple, black, yellow, and blue ; but there are many others hardly less to be admired.

Moths are hatched from eggs, and pass by far the greater part of their lives as larvæ, or caterpillars : some of them live in trees and feed on the leaves ; others live under the water ; and others again live in companies in a large web, which they construct together.

When about to pass into the pupa state, some of these caterpillars bury themselves in the earth, while others crawl into the hollow trunks of trees, and there undergo their change. A great many of them, however, spin cocoons, or cases of silk, around their bodies, and become pupæ when they have shut themselves up in these cases. It is to caterpillars of this kind, the larvæ of the Silkworm, that we are indebted for the silk which is so valuable an article of commerce, and gives employment to so many industrious people. The Silkworm is hatched in May ; it feeds for about eight weeks on mulberry leaves, and during this period it casts its skin four or five times. When it is full-grown it is observed to change from a dull white to a light golden hue ; it now leaves off feeding, and begins to spin its cocoon in some convenient spot. The spinning lasts about five days, by the end of which time the worm has shrunk to less than half its original length ; it now becomes torpid, and passes into the form of a chrysalis. If the cocoon be left untouched for the space of fifteen or twenty days, the chrysalis will by that time have changed to a Moth, and the Moth will have burst the cocoon and come forth. To prevent the Moth from thus destroying the silk, the keepers of Silkworms kill the pupæ by plunging them in scalding water, and then unwind the silk at their leisure, and prepare it for the market.

The Moth of the Silkworm (Fig. c) lives but for a very short period ; she lays her eggs one at a time, but very fast, and glues each one of them to the substance, whatever it is, on which she rests ; and when she has laid all her eggs she dies. The male Moth does not long survive her.

THE FLESH-FLY.



THE Flesh-fly, so common in our houses, and such an unwelcome guest in the pantry and larder during the heats of summer, is yet one of our greatest benefactors, because it is the means of clearing away vast quantities of corrupting and putrid matter, which would else infect the air and endanger our health. These large flies swarm in myriads around butchers' shops, slaughter-houses, tallow-stores, and meat-markets, and wherever the flesh of dead animals is to be found ; and they always exist in the greatest numbers where the least attention is paid to cleanliness. Linnæus tells us that three Flesh-flies would eat up a dead horse sooner than a lion could devour it, and there appears to be no reason to question this assertion ; not that the flies themselves eat the carcase—they

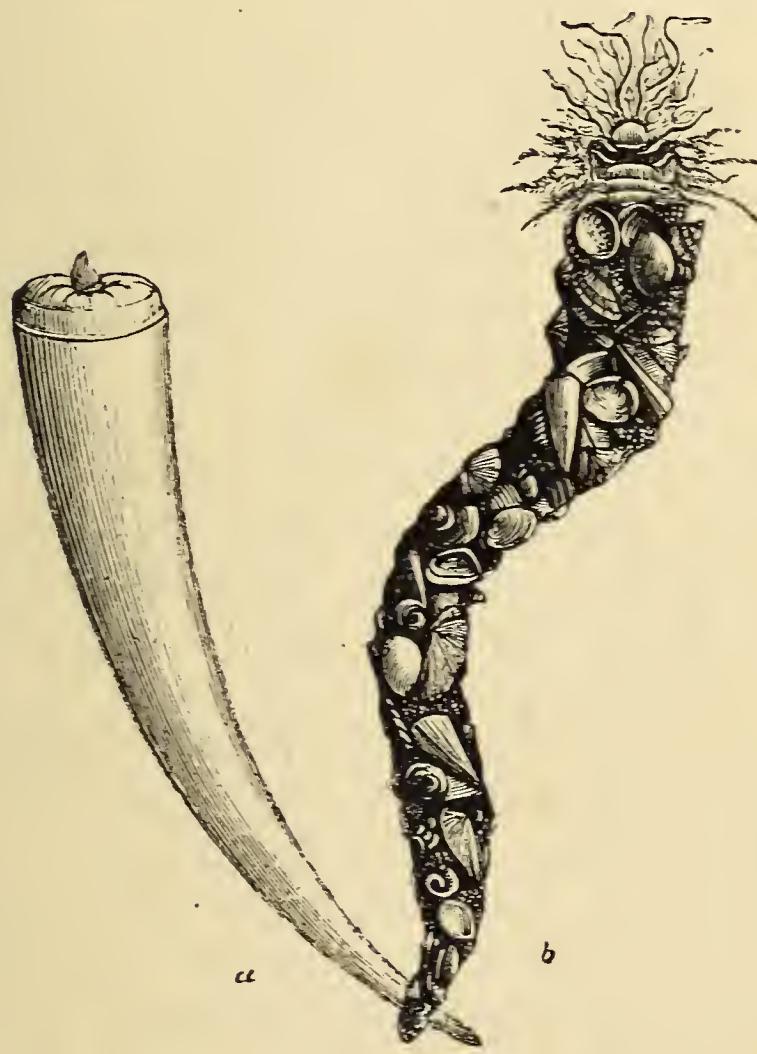
feed rather on sweets, and particularly on sweet fruits — but a common Flesh-fly will deposit on a dead animal twenty thousand living larvæ, each one of which will eat two hundred times its own weight in a day. The larva grows rapidly until it is nearly as large as the parent fly, and attains its full size in four or five days. It now leaves off feeding, and crawls away to bury itself in the ground, where, after a few days, it is changed from a soft white maggot (the angler's *gentle*) into a long egg-shaped pupa, hard to the touch, at first of a yellowish hue, and then deepening to a warm chestnut-brown. The time which the insect remains in the pupa state probably depends very much upon the nature of the soil in which it has buried itself: if that be warm and dry, the *imago*, or full-formed fly, will burst open the head of the cocoon, and come forth and fly away before a week has elapsed; but if the ground be moistened by rain, a much longer period may be necessary. Anglers, who use the larvæ as baits for nearly all kinds of fresh-water fish, are in the habit of keeping them in moist bran, by which they are prevented from passing into the pupa condition for many days, and even for weeks; and the pupæ which have been thus treated, though they will long retain the living principle in such unfavourable circumstances, will not burst their prison until they have been some time removed from the moist bran. Under favouring conditions the larvæ become full-formed Flesh-flies in about a fortnight after their birth; and were it not that they are the food of almost every small bird that flies, and have many enemies beside, their numbers would be an intolerable plague.

The Flesh-fly itself, though by no means so voracious as the larva, is a real pest in the garden. He sucks away tons of the ripest gooseberries, and spoils ten times more than he consumes; he plunders the cherries, the greengages, and the peaches, the mellow pears and the delicious apricots; in autumn he settles in

swarms upon the grapes, and will spoil or devour the crop of the largest out-door vine, unless the bunches are carefully protected by bags. When the cool weather comes, millions of these flies are attacked by a kind of fungus, which grows like a web round their bodies, and destroys them ; millions more fall a prey to the spiders ; and the rest, as the cold increases, betake themselves to their winter quarters, such as holes in walls, crevices in wood-work, the chimney sides in farm kitchens, and such like snug retreats, where they become quite torpid, and incapable of motion, until the warmth of returning summer recalls them to life, and they swarm forth again.

WORMS, ETC.

THE EARTH-WORM.—MARINE-WORMS.



THE Earth-worm is too well known to require any minute description: it lives a solitary life underground; it has no organs of vision, no feelers or tentacula wherewith to lay hold of anything; and its faculty of locomotion is but limited; it crawls upon the ground by elongating and contracting its wonderfully elastic body,

and is assisted in its progress by a number of almost imperceptible bristles or footstalks with which it in a manner clutches the soil. The utility of the Earth-worm has long been recognised, it having been shown by Mr. Darwin, and others, that the worm is the agent who from time to time renews the vegetative mould which covers the surface of the cultivable soil. It does this by depositing upon the ground those little intestinal shaped heaps of levigated earth which in growing weather are to be found lying at the base of the grassy turf in lawn or field, and which we often see protruded through the gravel-walks of the garden. These worm-castings are so abundant in some soils as to cover in a comparatively short time whole layers of lime, cinders, or gravel, and bury them several inches deep; and instances have been recorded of lands upon which, in the course of years, the soil deposited by worms has accumulated to a foot in depth.

The conduct of the Earth-worm in certain circumstances is well worthy of observation. Mr. Jesse has noticed that if you snatch a worm from his hole as he lies holding on to it with his tail, which he is fond of doing in moist weather, it is beyond your power to put him into it again, and, what is more, he cannot get into it himself. The present writer has remarked, that though as a general rule the Earth-worm will not quit his hole unless alarmed by the ground around him being shaken and disturbed, he is yet sometimes seen out of it on his travels, making his way with all the speed of which he is capable, apparently towards some definite goal. When watching them on these expeditions, we have never succeeded in tracking one to a hole in the ground; they seem rather to be in search of some cool shelter, and will make straight towards a pile of swept-up autumnal leaves, beneath which they disappear. Their fondness for leaves is instanced in another singular way. We have noticed that when the poplars in the garden shed their leaves, and they

fall on the gravel early in November, the worms will come out and make a property of them. This they do by rolling them up—though the leaves average some five inches in diameter—as one would roll up a map, and dragging them into their holes. We have withdrawn from worm-holes a dozen leaves of a morning, each one curled five or six times round, forming a perfect cylinder, and penetrating several inches into the ground; and we have noticed that those left undisturbed disappear underground in a few days.. How does the blind, limbless creature manage this difficult business ?

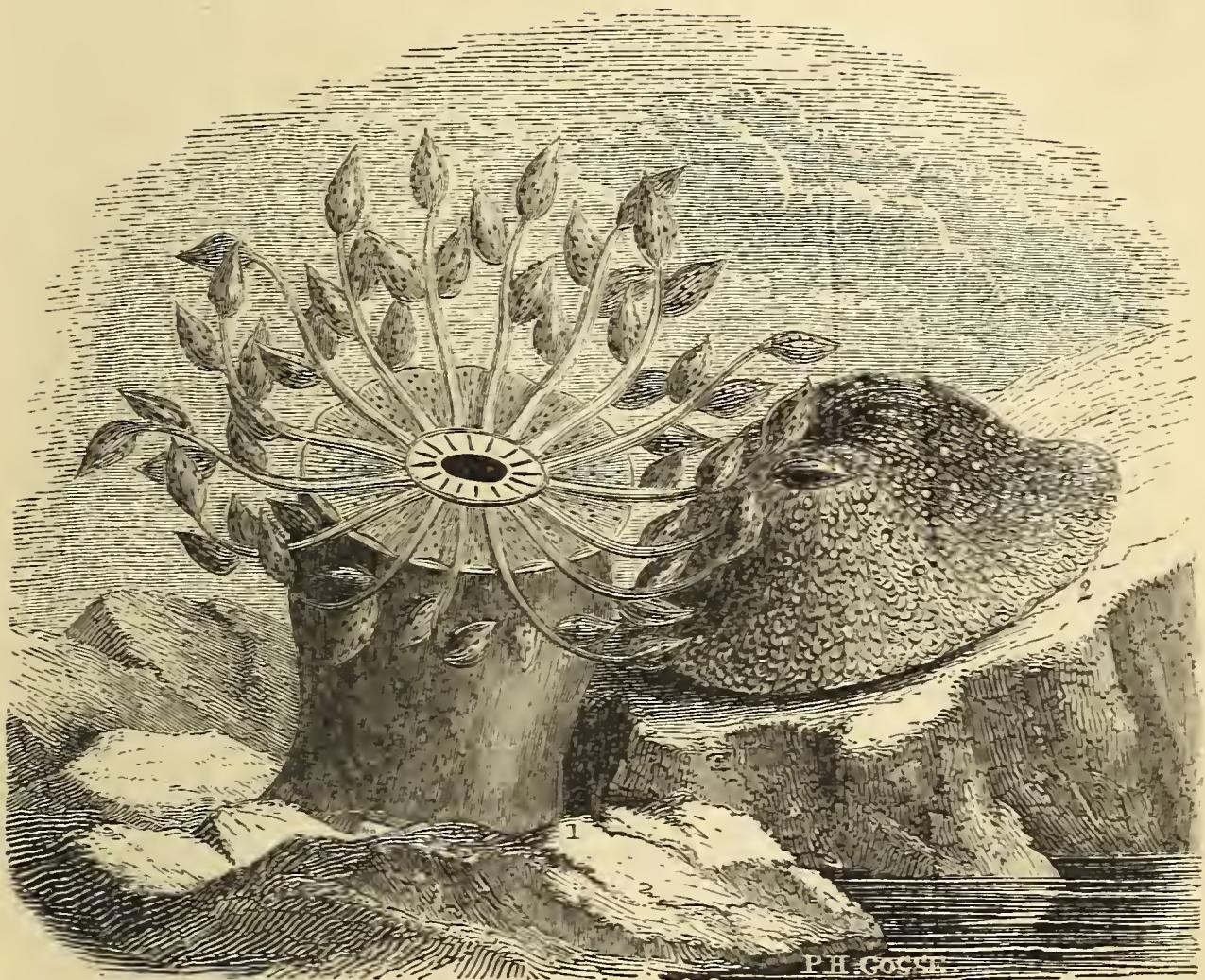
The helpless worm has a thousand enemies. Under-ground in the fields the mole devours them in multitudes, and constructs long galleries in the earth, which are his preserves and hunting-grounds. Above ground they are the food of nearly all our birds, native or migratory, from the duck down to the robin. Hedge-hogs and weasels devour them wholesale; and one fine August day we made the unexpected discovery that they have an enemy as yet unheard of. A fine lance-tail was gliding across the mould of a garden-bed, when suddenly there perched on his back a ferocious-looking dusky-haired grub, somewhat resembling, but more ugly if possible, that crawling monster known as “the Devil’s cart-horse.” The frightful incubus began hammering away at the poor worm near the tail, with its bullet head. The worm did not turn, but made desperate attempts to quicken its pace; finding this of no avail, it suddenly stopped, and contracting its body just above the point of attack, as though it were bound round with a ligature drawn tight, in an instant severed itself into two portions, leaving the part attacked in possession of the enemy. It did not, however, escape by this sacrifice; the grub was no sooner aware of the movement than he left the booty in hand, scampered after the runaway, and remounting his back, renewed the attack as before. Again the

worm, by the same process, cast off a portion of its body, but in vain: a third time its insatiable foe returned to the charge, and at length completed the slaughter of its victim.

Earth-worms are astonishingly prolific, and they had need be so, looking to the casualties to which they are exposed, and to the number of their enemies.

The Marine-worms present too large a subject for any detailed account in this place. They comprise a large class of animals, and their very names would form a long list which would want interest for the general reader. Some of them live in the mud of the sea-bottom; some in pipes of the texture and consistence of parchment; myriads of them live in calcareous tubes which they enlarge to meet the necessities of their growth. Some have their tubular dwellings free and isolated; others attach them to rocks and stones; others to sea-weeds; and others (and of these the numbers are incalculable) construct their tubes on the surfaces of oysters and other shell-fish. They present an endless variety of forms: some resemble slugs; others, furnished with hundreds of footstalks on each side of their bodies, remind us of the millepedes of the land, and, like millepedes, they crawl about under stones and fragments of rock. The strangest creature of all among the Marine-worms is surely the *Nemertes Borlasii*, a worm which is not more than the eighth of an inch in diameter, yet sometimes attains to the enormous length of thirty feet, and might be tolerably represented by a piece of dark-coloured whipcord reaching to the ground from the parapet of an ordinary three-storied house. This filamentous monster preys upon the tubular worms, entering their tubes and devouring them alive. It is described in Gosse's "Year at the Shore," and also, more at length, in Kingsley's "Glaucus."

THE SEA ANEMONE.



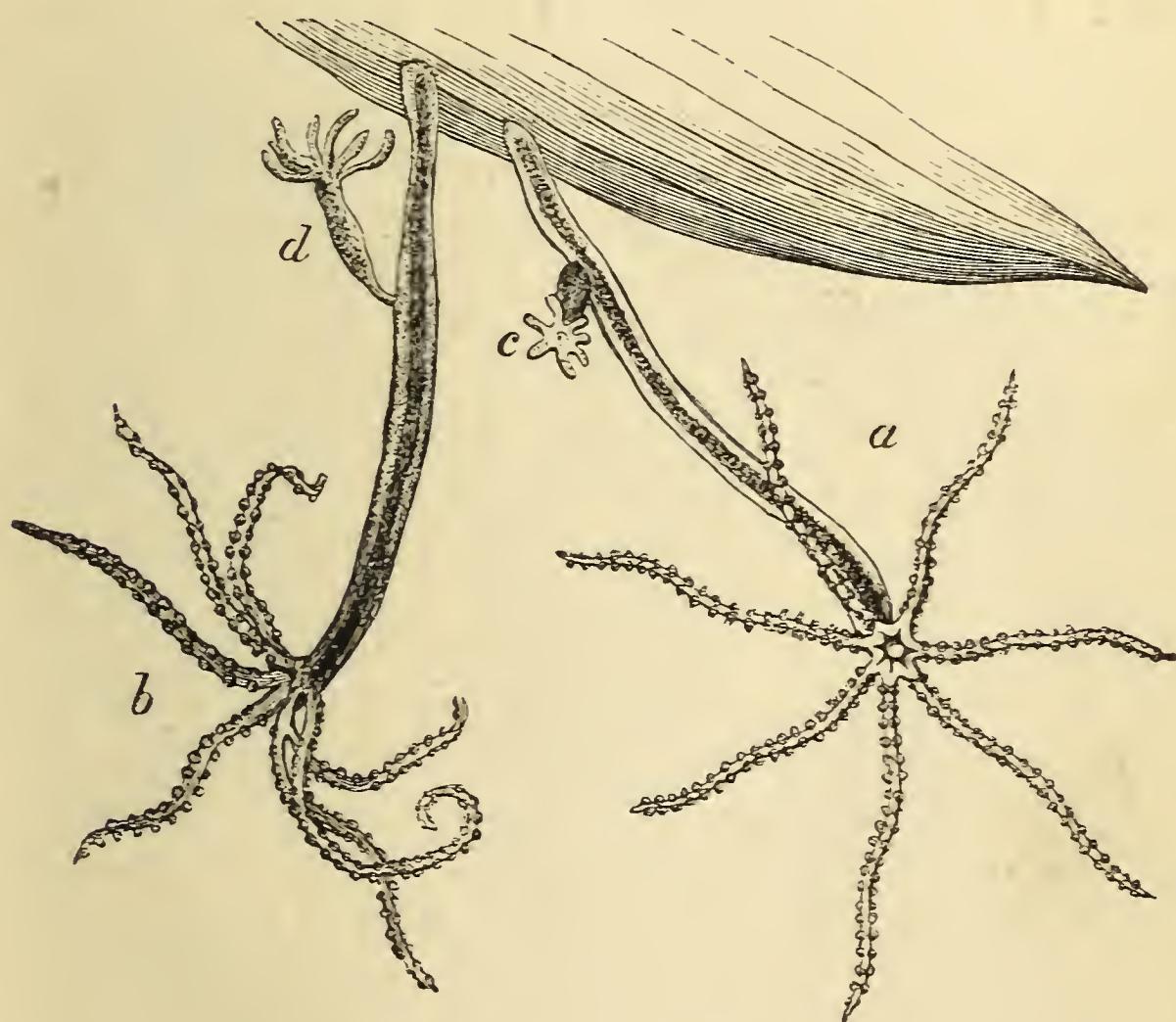
THE Sea Anemone belongs to the family of flower-shaped polypes, and it takes its name from its supposed resemblance to a well-known garden flower. The Anemone is usually found attached by its broad base to some rock, on which it can crawl slowly, like a slug. It is so different in appearance at different times, that it would hardly be taken for the same animal. When surprised or alarmed it looks like a mere round mass of flesh with a small closed orifice in the centre ; but if it is left undisturbed the orifice enlarges, and a number of tentacles are disclosed, spreading all round its margin like the petals of a flower. These tentacles, which are sometimes of a most ex-

quisite carnation tint, are used by the Anemone for seizing its prey, which they seem to stupify and paralyse by contact rather than compel by violence; for if a shrimp does but touch one of them with its antennæ, it can proceed no further, but is drawn into the stomach and digested. The process of swallowing is, however, very slow, and we have known a large Anemone to be over two hours gorging a shrimp of average size. Their usual food seems to be molluscs and crustacea, and they disgorge the shells by the same aperture through which they receive the owners of them. These animals are most curious and interesting, and some of the species are extremely beautiful. They are easily procured, as they abound on our rocky shores. Thousands of them are kept in private aquaria, and they are sold in the shops at the fashionable watering-places for that purpose: there is little trouble in their management, all that is necessary being an occasional change of sea-water (fresh water kills them), and a supply of small crustacea for their food. Some fine specimens may be seen in the Zoological Gardens.

THE HYDRA.

THE Hydra, the most interesting of the polypes, was discovered by Leeuwenhoek, in 1703, but its wonderful properties were first made known about forty years later by Trembley. These strange creatures inhabit fresh water only, preferring still ponds or slowly-flowing streams. They can hardly be said to have a definite and permanent shape, their bodies undergoing continual changes of form, and being at some periods ten or twelve times larger than at others. When contracted, the Hydra is flattish, with the semblance of a button or very small top, and when extended it becomes a narrow cylinder. Its mouth is encircled by a number

of tentacles, which are hollow and slightly tapered, and which change in size and form with the body. The Hydra is usually found attached to some plant or water-weed, but it has the power of locomotion, either by sliding slowly on its base, or by dragging itself along by means of its tentacles; in either case its progress is very slow, and contrasts vividly with its rapid and nimble motions when capturing its prey, which it does with the activity of a cat seizing a



mouse. The Hydræ are exceedingly voracious, preying greedily upon worms, which, notwithstanding their tenacity of life, they kill almost instantaneously—so suddenly indeed that it is conjectured there must be something poisonous in the Hydra's grasp.

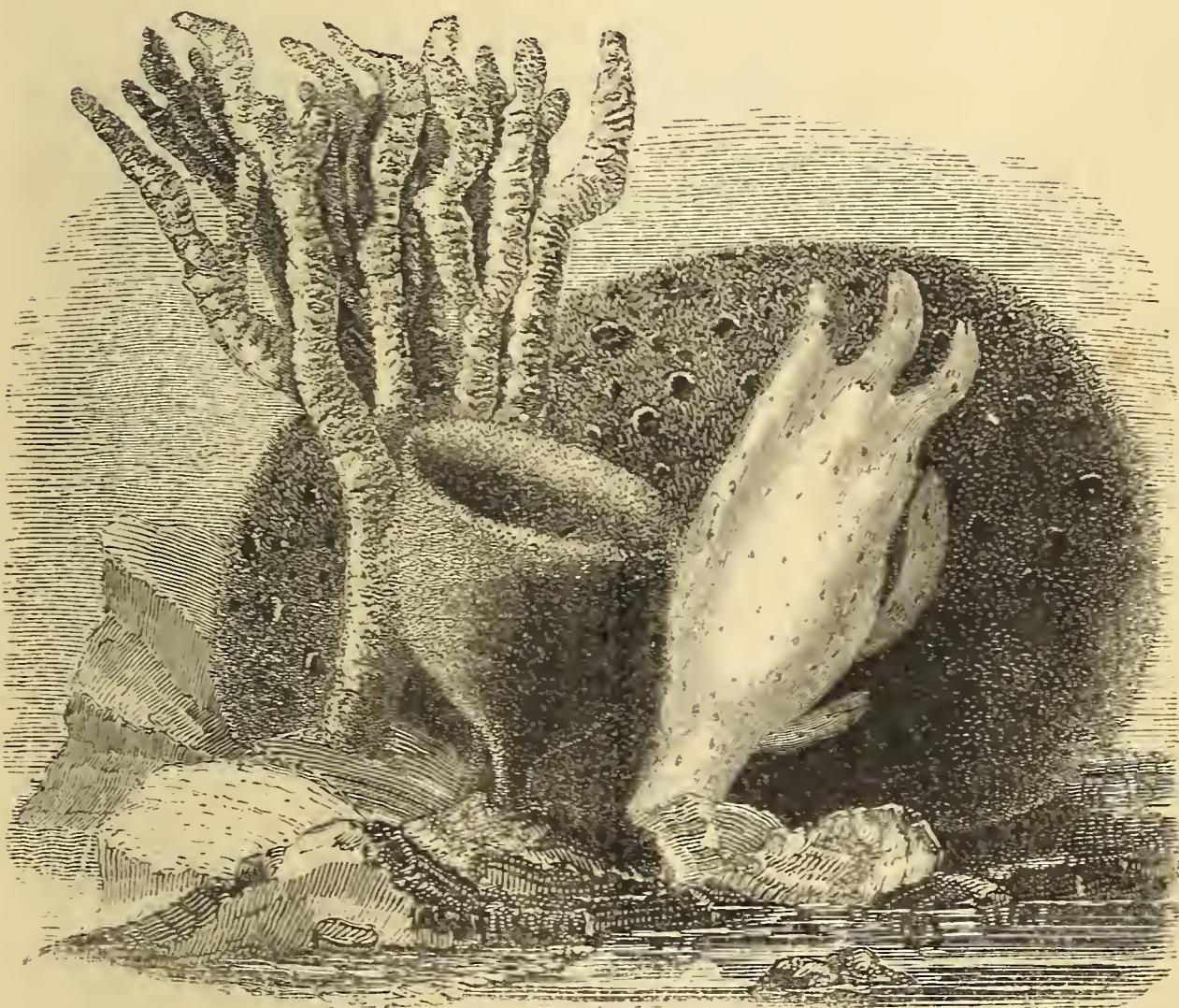
The most remarkable property of the Hydra is the strange and almost incredible manner in which it propagates its species naturally, or may be multiplied

by artificial means. Its natural mode of increase is by subdivision: "During the summer season a large tubercle arises on the surface, which, lengthening and enlarging every hour, in a day or two develops in regular succession and in successive pairs a series of tentacula, and becomes in all respects, except in size, similar to its parent. It remains attached for some time, and grows and feeds, and contracts and expands after the fashion of its parent, until it is at length thrown off by a process of exfoliation or sloughing. They develop with great rapidity in warm weather, and sometimes the young ones themselves breed others, and they again a third and fourth generation before they become separated from the original parent." This is sufficiently wonderful, but their reproduction artificially is far more strange. "If the body of a Hydra be halved in any direction, each half in a short time grows to a perfect Hydra; if it is cut into four or eight or even minced into forty pieces, each continues alive, and develops a new animal which is itself capable of being multiplied in the same extraordinary manner. If the section is made lengthwise so as to divide the body into two or more slips connected merely by the tail, they are speedily reunited into a perfect whole; or if the pieces are kept asunder, each will become a perfect polyp. If the tentacula are cut away, new ones are quickly produced, and the lopt-off parts are not long without a new body. When a piece is cut out of the body the wound speedily heals, and, as if excited by the stimulus of the knife, young polyps sprout from the wound more abundantly. When a polyp is introduced by the tail into another body, the two unite and form one individual; and when a head is lopped off, it may safely be engrafted on the body of any other which may chance to want one. And the creature suffers nothing itself by all these apparently cruel operations; for before the lapse of many minutes the upper half of a cross section will expand its tentacula and catch prey

as usual, and the two portions of a longitudinal division will after an hour or two take food and retain it." (See Johnston's "Hist. of British Zoophytes.")

The British species of this strange genus are, the *Common Hydra*, the *Green Hydra*, the *Attenuated Hydra*, and the *Long-armed Hydra*.

THE SPONGE.



THE Sponge exhibits the very lowest grade of animal life. It is fixed firmly to the rock on which it grows, and has not the slightest power of changing its position ; it cannot be made to betray any sense of feeling either by cutting or burning it ; and it has no stomach to retain nourishment. That the Sponge is nevertheless an animal was proved by the investiga-

tions of Professor Bell, who, on examining a branch of a living Sponge through a microscope, discovered a process of circulation constantly going on, by which food was conveyed through the smallest pores of the mass. The Sponge, as we receive it for use, is not the entire animal, but only the skeleton of it: in life every fibre is coated with a thin jelly, and it is that which is the living portion of the Sponge. Sponges are found in a variety of forms, and on nearly every coast. The common Sponge of commerce comes from the Mediterranean, where it is brought up to the surface by divers, who descend for them to a great depth. So firmly are the creatures attached to the rocks, that it frequently happens that several men have to descend one after another before they can succeed in detaching a large one from its hold.

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